Tamil Nadu Physical Education and Sports University
Chennai 600 127
Criterion 3 – Research, Innovations and Extension

3.4.2 PATENTS

E Copies of letter of patent grant

Registrar
Tamilnadu Physical Education
and
Sports University
Chennai - 600 127.

3.4.2 Supportive Documents

S.No.	Name of the Staff	Publication Date	Application No.	Title of Invention	Page Number
1.	Dr.P.Kumaravelu	05/01/2024	202341084156	Advanced hypoxic room system for optimal training and therapy	03-49
2.	Dr.R.Ramakrishnan Dr.G.Nallavan	01/09/2023	202341055036	Design and Development of Sustainable Sports Shoes using natural Plant based alternative	50-84
3.	Dr.P.Kumaravelu	17/03/2023	20231012900	AI Based Yoga Mat with Attachable Markers	85-187

Office of the Controller General of Patents, Designs & Trade Marks
Department for Promotion of Industry and Internal Trade
Ministry of Commerce & Industry,
Government of India

(http://ipindia.nic.in/index.htm)

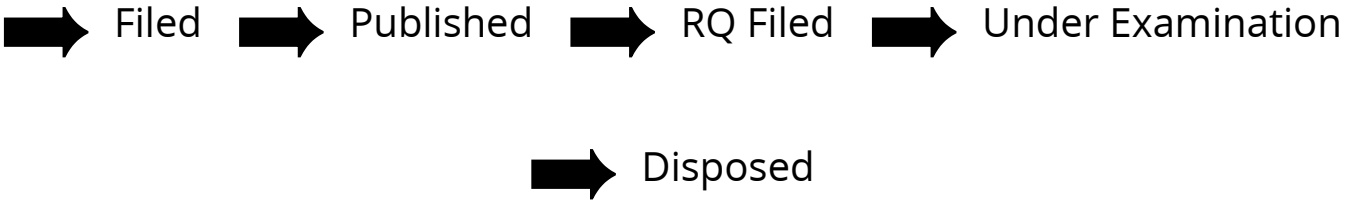
(http://ipindia.nic.in/index.htm)

Application Details	
APPLICATION NUMBER	202341084156
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	10/12/2023
APPLICANT NAME	1 . Prof. M. Elayaraja 2 . Prof.Arvind Malik 3 . Prof. R. Mohana Krishnan 4 . Dr.M.Senthil Kumar 5 . Dr.M.Mahalingam 6 . Dr.P.Kumaravelu 7 . Prof.S.Saroja 8 . Dr.S.Jayasingh Albert Chandrasekar 9 . Dr.M.Siva 10 . Mr.K.Govindasamy
TITLE OF INVENTION	“ADVANCED HYPOXIC ROOM SYSTEM FOR OPTIMAL TRAINING AND THERAPY”
FIELD OF INVENTION	BIO-MEDICAL ENGINEERING
E-MAIL (As Per Record)	ipr.elpisanalytix@gmail.com
ADDITIONAL-EMAIL (As Per Record)	
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	30/01/2024
PUBLICATION DATE (U/S 11A)	05/01/2024

Application Status

APPLICATION STATUS	Application Awaiting Examination

			View Documents



In case of any discrepancy in status, kindly contact ipo-helpdesk@nic.in

FORM 18 THE PATENT ACT, 1970 (39 of 1970) & THE PATENTS RULES, 2003 **REQUEST/ EXPRESS REQUEST FOR EXAMINATION OF APPLICATION FOR PATENT** [See section 11B and rules 20(4) (ii), 24B (1) (i)]	**(FOR OFFICE USE ONLY)** RQ. No.: Filing Date: Amount of Fee paid: CBR No: Signature:

1. APPLICANT(S)/ OTHER INTERESTED PERSON(S)

(a) Name: **1.** Prof. M. Elayaraja

2. Prof. Arvind Malik

3. Prof. R. Mohana Krishnan

4. Dr. M. Senthil Kumar

5. Dr. M. Mahalingam

6. Dr. P. Kumaravelu

7. Prof. S. Saroja

8. Dr. S. Jayasingh Albert Chandrasekar

9. Dr. M. Siva

10. Mr. K. Govindasamy

(b) Nationality: **Indian**

(c) Address: **1. Professor and Director i/c, Department of Physical Education and Sports, Pondicherry University, Puducherry, India. 605014;**

2. Professor and Dean Department of Physical Education Kurukshetra University, Kurukshetra, India 136119;

3. Professor & Director, Directorate of Sports, SRM Institute of Science and Technology, Kattankulathur, Tamil Nadu, India- 603203;

4. Associate Professor & Head Department of Yoga, Faculty of Science and Humanities, SRM Institute of Science and Technology, Kattankulathur, Tamil Nadu, India- 603203;

5. Professor & Head (Additional) Department of Physical Education & Sports, Association Convener, Magic Events, Dr. M.G.R Educational and Research Institute, Deemed to be University, Maduravoyal, Chennai, India- 600095;

6. Associate Professor, Department of Physical Education, Tamil Nadu Physical Education and Sports University, Mellakottaiyur, Tamil Nadu, India- 600127;

7. Professor cum Coordinator, Centre for Yoga Education, Alagappa University, Karaikudi, Tamil Nadu, India- 630003;

8. Associate Professor & Head Department of Physical Education and Sports Sciences, Faculty of Science and Humanities, SRM Institute of Science and Technology, Kattankulathur, Tamil Nadu, India- 603203;

9. Assistant Professor, Department of Physical Education and Sports Sciences, Faculty of Science and Humanities, SRM Institute of Science and Technology,

Kattankulathur, Tamil Nadu, India- 603203;

10. Doctoral Research Fellow, Department of Physical Education and Sports Sciences, Faculty of Science and Humanities, SRM Institute of Science and Technology, Kattankulathur, Tamil Nadu, India- 603203.

(d) Date of publication of the application under section 11A: **05/01/2024**

2. STATEMENT IN CASE OF REQUEST FOR EXAMINATION MADE BY THE APPLICANT(S)

We hereby request that our application for patent no. **202341084156** filed on **10/12/2023** for the invention titled **"ADVANCED HYPOXIC ROOM SYSTEM FOR OPTIMAL TRAINING AND THERAPY"** shall be examined under sections 12 and 13 of the Act.

Or

~~I/We hereby make an express request that my/our application for patent no…… filed on…… based on Patent Cooperation Treaty (PCT) application no….. dated……. made in country…… shall be examined under sections 12 and 13 of the Act, immediately without waiting for the expiry of 31 months as specified in rule 20(4)(ii).~~

~~**3. STATEMENT IN CASE OF REQUEST FOR EXAMINATION MADE BY ANY OTHER INTERESTED PERSON**~~

~~I/We the interested person request for the examination of the application no. ..... dated **…….** filed by the applicant …….. titled ..... under sections 12 and 13 of the Act.~~

~~As an evidence of my/our interest in the application for patent following documents are submitted.~~

~~(a)……~~

~~……~~

4. ADDRESS FOR SERVICE

Ms Somya Kaushik

1004/E, Babarpur, New Delhi-110032

Dated this 30th day of January, 2024

Signature

Somya Kaushik
AGENT FOR THE APPLICANT
IN/PA/5019

To
The Controller of Patents
The Patent Office, at Delhi

FORM 5
THE PATENTS ACT 1970
(39 of 1970)
&
THE PATENTS RULES, 2003
DECLARATION AS TO INVENTORSHIP
[See section 10 (6) and 13 (6)]

1. APPLICANT

Name	Nationality	Address
Prof. M. Elayaraja	Indian	Professor and Director i/c, Department of Physical Education and Sports, Pondicherry University, Puducherry, India. 605014
Prof. Arvind Malik	Indian	Professor and Dean Department of Physical Education Kurukshetra University, Kurukshetra, India 136119
Prof. R. Mohana Krishnan	Indian	Professor & Director Directorate of Sports, SRM Institute of Science and Technology, Kattankulathur, Tamil Nadu, India- 603203
Dr. M. Senthil Kumar	Indian	Associate Professor & Head Department of Yoga, Faculty of Science and Humanities, SRM Institute of Science and Technology, Kattankulathur, Tamil Nadu, India- 603203
Dr. M. Mahalingam	Indian	Professor & Head (Additional) Department of Physical Education & Sports, Association Convener, Magic Events, Dr. M.G.R Educational and Research Institute, Deemed to be University, Maduravoyal, Chennai, India- 600095
Dr. P. Kumaravelu	Indian	Associate Professor, Department of Physical Education, Tamil Nadu Physical Education and Sports University, Mellakottaiyur, Tamil Nadu, India- 600127
Prof. S. Saroja	Indian	Professor cum Coordinator, Centre for Yoga Education, Alagappa University, Karaikudi, Tamil Nadu, India- 630003
Dr. S. Jayasingh Albert Chandrasekar	Indian	Associate Professor & Head Department of Physical Education and Sports Sciences, Faculty of Science and

		Humanities, SRM Institute of Science and Technology, Kattankulathur, Tamil Nadu, India- 603203
Dr. M. Siva	Indian	Assistant Professor, Department of Physical Education and Sports Sciences, Faculty of Science and Humanities, SRM Institute of Science and Technology, Kattankulathur, Tamil Nadu, India- 603203
Mr. K. Govindasamy	Indian	Doctoral Research Fellow, Department of Physical Education and Sports Sciences, Faculty of Science and Humanities, SRM Institute of Science and Technology, Kattankulathur, Tamil Nadu, India- 603203

hereby declare that the true and first inventor of the invention disclosed in the complete specification filed in pursuance of our application numbered **202341084156** and titled **"ADVANCED HYPOXIC ROOM SYSTEM FOR OPTIMAL TRAINING AND THERAPY"** is:

2. INVENTOR

Name	Nationality	Address
Prof. M. Elayaraja	Indian	Professor and Director i/c, Department of Physical Education and Sports, Pondicherry University, Puducherry, India. 605014
Prof. Arvind Malik	Indian	Professor and Dean Department of Physical Education Kurukshetra University, Kurukshetra, India 136119
Prof. R. Mohana Krishnan	Indian	Professor & Director Directorate of Sports, SRM Institute of Science and Technology, Kattankulathur, Tamil Nadu, India- 603203
Dr. M. Senthil Kumar	Indian	Associate Professor & Head Department of Yoga, Faculty of Science and Humanities, SRM Institute of Science and Technology, Kattankulathur, Tamil Nadu, India- 603203
Dr. M. Mahalingam	Indian	Professor & Head (Additional) Department of Physical Education & Sports, Association Convener, Magic Events, Dr. M.G.R Educational and Research Institute,

		Deemed to be University, Maduravoyal, Chennai, India- 600095
Dr. P. Kumaravelu	Indian	Associate Professor, Department of Physical Education, Tamil Nadu Physical Education and Sports University, Mellakottaiyur, Tamil Nadu, India- 600127
Prof. S. Saroja	Indian	Professor cum Coordinator, Centre for Yoga Education, Alagappa University, Karaikudi, Tamil Nadu, India- 630003
Dr. S. Jayasingh Albert Chandrasekar	Indian	Associate Professor & Head Department of Physical Education and Sports Sciences, Faculty of Science and Humanities, SRM Institute of Science and Technology, Kattankulathur, Tamil Nadu, India- 603203
Dr. M. Siva	Indian	Assistant Professor, Department of Physical Education and Sports Sciences, Faculty of Science and Humanities, SRM Institute of Science and Technology, Kattankulathur, Tamil Nadu, India- 603203
Mr. K. Govindasamy	Indian	Doctoral Research Fellow, Department of Physical Education and Sports Sciences, Faculty of Science and Humanities, SRM Institute of Science and Technology, Kattankulathur, Tamil Nadu, India- 603203

Dated this 11th day of December, 2023

1. Signature:

Name: Prof. M. Elayaraja

2. Signature:

Name: Prof. Arvind Malik

3. Signature:
Name: Prof. R. Mohana Krishnan

4. Signature:
Name: Dr. M. Senthil Kumar

5. Signature:
Name: Dr. M. Mahalingam

6. Signature:
Name: Dr. P. Kumaravelu

7. Signature:
Name: Prof. S. Saroja

8. Signature
Name: Dr. S. Jayasingh Albert

Chandrasekar

9. Signature:
Name: Dr. M. Siva

10. Signature
Name: Mr. K. Govindasamy

Somya Kaushik
AGENT FOR THE APPLICANT
IN/PA/5019

To,
The Controller of Patents,
The Patent Office,
at Delhi

FORM 3

THE PATENTS ACT, 1970

(39 OF 1970)

&

THE PATENTS RULES, 2003

We, **Prof. M. Elayaraja**, an Indian Citizen having registered address at **Professor and Director i/c, Department of Physical Education and Sports, Pondicherry University, Puducherry, India. Kalapet Puducherry 605014**; **Prof.Arvind Malik** an Indian Citizen having registered address at **Professor and Dean Department of Physical Education Kurukshetra University, Kurukshetra.; Prof. R. Mohana Krishnan** an Indian Citizen having registered address at **Professor & Director Directorate of Sports SRM Institute of Science and Technology, Kattankulathur, Tamil Nadu, India.; Dr.M.Senthil Kumar** an Indian Citizen having registered address at **Associate Professor & Head Department of Yoga, Faculty of Science and Humanities, SRM Institute of Science and Technology, Kattankulathur, Tamil Nadu, India.; Dr.M.Mahalingam** an Indian Citizen having registered address at **Professor & Head (Additional) Department of Physical Education & Sports, Association Convener, MagicEvents, Dr.M.G.R Educational and Research Institute, Deemed to be University, Maduravoyal, Chennai.; Dr.P.Kumaravelu** an Indian Citizen having registered address at **Associate Professor, Department of Physical Education, Tamil Nadu Physical Education and Sports University, Mellakottaiyur, Tamil Nadu, India.; Prof.S.Saroja** an Indian Citizen having registered address at **Professor cum Coordinator, Centre for Yoga Education, Alagappa University, Karaikudi; Dr.S.Jayasingh Albert Chandrasekar** an Indian Citizen having registered address at **Associate Professor & Head Department of Physical Education and Sports Sciences, Faculty of Science and Humanities, SRM Institute of Science and Technology, Kattankulathur, Tamil Nadu, India**.; **Dr.M.Siva** an Indian Citizen having registered address at **Assistant Professor, Department of Physical Education and Sports Sciences, Faculty of Science and Humanities, SRM Institute of Science and Technology, Kattankulathur, Tamil Nadu, India.; Mr.K.Govindasamy,** an Indian

Citizen having registered address at **Doctoral Research Fellow, Department of Physical Education and Sports Sciences, Faculty of Science and Humanities, SRM Institute of Science and Technology, Kattankulathur, Tamil Nadu, India;** .hereby declare

(i) that we who has made the Application #_ had not made any application for the same/substantially the same invention outside India

(ii) that we undertake that up-to the date of grant of the patent, by the Controller, we would keep him informed in writing the details regarding corresponding applications for the patents filed outside India within three months from the date of filing of such application.

Dated this 11th day of December, 2023

Somya Kaushik
AGENT FOR THE APPLICANT
IN/PA/5019

To,

The Controller of Patents

The Patent Office,

New Delhi.

उत्तर प्रदेश UTTAR PRADESH

FY 585971

Signature Not Verified

Digitally Signed
Name: Somya Kaushik
Date: 12-Dec-2023 12:26:19
Reason: Patent Efiling
Location: DELHI

FORM –26
THE PATENTS ACT, 1970
(39 of 1970)
&
THE PATENTS RULES, 2003
Form for Authorization of a Patent Agent/ or Any Person in a Matter or Proceeding under the Act
(See sections 127 and 132; rule 135)

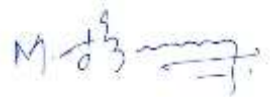
We, **Prof. M. Elayaraja**, an Indian Citizen having registered address at **Professor and Director i/c, Department of Physical Education and Sports, Pondicherry University, Puducherry, India. Kalapet Puducherry 605014**; **Prof.Arvind Malik** an Indian Citizen having registered address at **Professor and Dean Department of Physical Education Kurukshetra University, Kurukshetra.; Prof. R. Mohana Krishnan** an Indian Citizen having registered address at **Professor & Director Directorate of Sports SRM Institute of Science and Technology, Kattankulathur, Tamil Nadu, India**.**; Dr.M.Senthil Kumar** an Indian Citizen having registered address at **Associate Professor & Head Department of Yoga, Faculty of Science and Humanities, SRM Institute of Science and Technology, Kattankulathur, Tamil Nadu, India**.**; Dr.M.Mahalingam** an Indian Citizen having registered address at **Professor & Head (Additional) Department of Physical Education & Sports, Association Convener, MagicEvents, Dr.M.G.R Educational and Research Institute, Deemed to be University, Maduravoyal, Chennai.; Dr.P.Kumaravelu** an Indian Citizen having registered address at **Associate Professor, Department of Physical Education, Tamil Nadu Physical Education and Sports University, Mellakottaiyur, Tamil Nadu, India.; Prof.S.Saroja** an Indian Citizen having registered address at **Professor cum Coordinator, Centre for Yoga Education, Alagappa University, Karaikudi; Dr.S.Jayasingh Albert Chandrasekar** an Indian Citizen having registered address at **Associate Professor & Head Department of Physical Education and Sports Sciences, Faculty of Science and Humanities, SRM Institute of Science and Technology, Kattankulathur, Tamil Nadu, India**.; **Dr.M.Siva** an Indian Citizen having registered address at **Assistant Professor, Department of Physical Education and Sports Sciences, Faculty of Science and Humanities, SRM Institute of Science and**

Technology, Kattankulathur, Tamil Nadu, India.; Mr.K.Govindasamy, an Indian Citizen having registered address at **Doctoral Research Fellow, Department of Physical Education and Sports Sciences, Faculty of Science and Humanities, SRM Institute of Science and Technology, Kattankulathur, Tamil Nadu, India**; hereby authorise **Ms. Ojeswini Bondalapati** Agent **(IN/PA/2969); Ms. Somya Kaushik (IN/PA/5019)** of **Elpis Analytix**, having their office address at **1004/E, Lohiya Gali No. 4, Babarpur, New Delhi,-110032** to act on our behalf in connection with filling of patent application for the invention under the above mentioned Act in respect of invention entitled **"ADVANCED HYPOXIC ROOM SYSTEM FOR OPTIMAL TRAINING AND THERAPY"** and request that all notices, requisitions and communication relating thereto may be sent to such persons at the above address unless otherwise specified.

We hereby revoke all previous authorizations, if any made, in respect of same matter or proceeding.

We hereby assent to the action already taken by the said persons in the above matters.

Dated this **11**th day of **December, 2023**



1. Signature:
   Name: Prof. M. Elayaraja

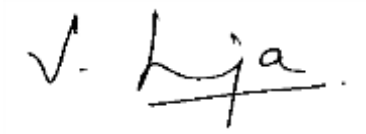
2. Signature:
   Name: Prof. Arvind Malik

3. Signature:
   Name: Prof. R. Mohana Krishnan

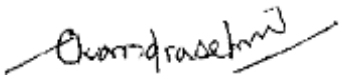
4. Signature:
   Name: Dr. M. Senthil Kumar

5. Signature:
Name: Dr. M. Mahalingam

6. Signature:
Name: Dr. P. Kumaravelu



7. Signature:
Name: Prof. S. Saroja Chandrasekar



8. Signature
Name: Dr. S. Jayasingh Albert

9. Signature:
Name: Dr. M. Siva

10. Signature
Name: Mr. K. Govindasamy

Somya Kaushik
AGENT FOR THE APPLICANT
IN/PA/5019

To,
The Controller of Patents,
The Patent Office,
at Delhi

FORM 2

THE PATENTS ACT, 1970

(39 of 1970)

&

THE PATENTS RULES, 2003

COMPLETE SPECIFICATION

(See Section 10; rule 13)

Title of the Invention

"ADVANCED HYPOXIC ROOM SYSTEM FOR OPTIMAL TRAINING AND THERAPY"

APPLICANTS:

Name : Prof. M. Elayaraja, Prof.Arvind Malik, Prof. R. Mohana Krishnan, Dr.M.Senthil Kumar, Dr.M.Mahalingam, Dr.P.Kumaravelu, Prof.S.Saroja, Dr.S.Jayasingh Albert Chandrasekar, Dr.M.Siva, Mr.K.Govindasamy,

Nationality : Indian

Address :

The following specification particularly describes the invention and the manner in which it is performed.

TECHNICAL FIELD

[0001] The present invention relates to the hypoxic room systems used for training and therapy. The system aims to simulate low-oxygen conditions found at high altitudes to provide a controlled environment for optimal training and therapeutic purposes. The invention incorporates advanced features such as personalized hypoxic control, integrated physiological monitoring, environmental control, performance tracking, telemedicine integration, interactive training interface, adaptive training programs, and a hypoxic room network.

BACKGROUND ART

[0002] Background description includes information that may be useful in understanding the present invention. It is not an admission that any of the information provided herein is prior art or relevant to the presently claimed invention, or that any publication specifically or implicitly referenced is prior art.

[0003] In recent years, the pursuit of optimal training methodologies and therapeutic interventions has led to the development of advanced systems that can simulate specific environmental conditions to enhance physiological responses. Among these innovations, hypoxic room systems have gained prominence, offering a controlled setting where individuals can experience reduced oxygen levels akin to high-altitude environments. This technology finds applications in various fields, including athletic training, fitness enhancement, and medical therapy.

[0004] The inspiration for hypoxic training stems from the physiological adaptations observed in individuals acclimatized to high-altitude regions. At elevated altitudes, the partial pressure of oxygen is lower, triggering responses within the body to cope with reduced oxygen availability. These adaptations include increased red blood cell production, improved oxygen utilization, and enhanced cardiovascular efficiency. Mimicking these conditions in a controlled setting presents a valuable opportunity for athletes, fitness enthusiasts, and individuals undergoing certain medical treatments.

[0005] Traditional hypoxic room systems have primarily focused on providing

a generalized experience, with a uniform reduction in oxygen levels. However, advancements in technology have paved the way for a more sophisticated and personalized approach to hypoxic training and therapy. Recognizing that individuals vary in fitness levels, medical conditions, and training goals, the incorporation of personalized hypoxic control has become a crucial aspect of innovation in this field.

[0006] The proposed hypoxic room system aims to revolutionize the way individuals experience and benefit from reduced oxygen environments. By introducing a personalized hypoxic control system, the invention acknowledges the diversity of users and their unique requirements. This adaptation allows for a tailored approach, ensuring that individuals can optimize their training or therapeutic sessions based on factors such as fitness levels, medical history, and specific training objectives.

[0007] Moreover, the integration of physiological monitoring adds an extra layer of safety and effectiveness to hypoxic training. Real-time tracking of vital signs, including heart rate, blood pressure, and oxygen saturation, enables continuous assessment of an individual's well-being during sessions. This not only ensures a safer training environment but also provides valuable data for refining personalized hypoxic protocols.

[0008] The environmental control module further enhances the user experience by regulating temperature, humidity, and ventilation within the hypoxic room. Creating a comfortable and controlled environment is crucial for the success of hypoxic training, as adverse effects related to changes in altitude simulation can be mitigated through optimal environmental conditions.

[0009] Performance tracking and analysis introduce a data-driven dimension to hypoxic training. Monitoring parameters such as power output, lactate threshold, and endurance provides individuals and their coaches with valuable insights into their progress. This feedback loop facilitates the refinement of training programs, ensuring that users achieve their desired outcomes effectively.

[0010] Telemedicine integration addresses the growing need for remote monitoring and consultation, especially for individuals undergoing hypoxic therapy for medical purposes. This feature enhances accessibility to healthcare professionals, fostering a more comprehensive and inclusive approach to hypoxic training and therapy.

[0011] The interactive training interface, incorporating elements of virtual or augmented reality, adds an engaging and motivational aspect to hypoxic sessions. Guided by coaches or interactive programs, users can benefit from a more immersive training experience, enhancing adherence and overall effectiveness.

[0012] The adaptive hypoxic training programs cater to the diverse needs of users by offering a range of protocols tailored to different sports, activities, and fitness levels. This versatility ensures that individuals receive a training regimen aligned with their specific goals and requirements.

[0013] Establishing a hypoxic room network opens avenues for collaboration and standardization in hypoxic training protocols. Athletes, coaches, and medical professionals can share data, experiences, and best practices, contributing to the advancement of hypoxic training as a mainstream practice.

[0014] In summary, the background of this innovative hypoxic room system encompasses a journey from the basic concept of simulating high-altitude conditions to a sophisticated, personalized, and interconnected approach that caters to the unique needs of individuals across various domains. The integration of advanced features positions this system at the forefront of hypoxic training and therapy, promising a paradigm shift in how individuals' approach and benefit from simulated altitude environments.

[0015] All publications herein are incorporated by reference to the same extent as if each individual publication or patent application were specifically and individually indicated to be incorporated by reference. Where a definition or use of a term in an incorporated reference is inconsistent or contrary to the definition of

that term provided herein, the definition of that term provided herein applies and the definition of that term in the reference does not apply.

OBJECTS OF THE INVENTION

[0016] The principal object of the present invention is to overcome the disadvantages of the prior art.

[0017] Another object of the present invention is to provide an advanced hypoxic room system for optimal training and therapy.

[0018] Another object of the present invention aims to track vital signs in real-time such as heart rate, blood pressure, and oxygen saturation enhances user safety and provides valuable insights into the impact of hypoxic conditions on the body.

[0019] Another object of the present invention is to maintain optimal environmental conditions within the hypoxic room by regulating temperature, humidity, and ventilation.

[0020] Another object of the present invention is to provide an elegant, reliable and precise approach towards the advanced hypoxic room system for optimal training and therapy.

[0021] Yet another object of the present invention is to provide a process of improving functionalities of the advanced hypoxic room system for optimal training and therapy.

SUMMARY

[0022] The present invention relates to the hypoxic room systems used for training and therapy. The system aims to simulate low-oxygen conditions found at high altitudes to provide a controlled environment for optimal training and therapeutic purposes. The invention incorporates advanced features such as personalized hypoxic control, integrated physiological monitoring, environmental control, performance tracking, telemedicine integration, interactive training interface, adaptive training programs, and a hypoxic room network.

[0023] The advanced hypoxic room system for optimal training and therapy includes a personalized hypoxic control system, wherein the reduction in oxygen levels is dynamically adjusted based on individual parameters, including but not limited to fitness levels, medical history, and desired training intensity, an integrated physiological monitoring system that tracks vital signs, including heart rate, blood pressure, and oxygen saturation levels in real-time during hypoxic training or therapy sessions, an environmental control module integrated into the hypoxic room system, regulating temperature, humidity, and ventilation to maintain optimal environmental conditions, thereby enhancing user comfort and preventing adverse effects related to changes in altitude simulation, a performance tracking and analysis modules incorporated into the hypoxic room system, measuring athletic performance parameters such as power output, lactate threshold, and endurance during hypoxic training, providing users with data-driven insights into their progress, a telemedicine integration in the hypoxic room system, facilitating remote monitoring and consultation with healthcare professionals, particularly beneficial for individuals undergoing hypoxic therapy for medical purposes, an interactive training interface within the hypoxic room system, offering guidance, coaching, and motivational content during hypoxic training sessions, with the option of incorporating virtual reality or augmented reality elements to enhance user engagement, an adaptive hypoxic training programs provided by the hypoxic room system, offering a suite of protocols tailored to different sports, activities, and fitness levels, ensuring personalized and optimized training experiences for users, and a network of hypoxic rooms accessible to athletes, coaches, and medical professionals, fostering collaboration, data sharing, and the development of standardized hypoxic training protocols.

[0024] According to an aspect, the personalized hypoxic control system utilizes advanced technology, including molecular sieve pressure-swing adsorption or membrane separation, to achieve the desired reduction in oxygen levels. The physiological monitoring system includes sensors for monitoring additional parameters such as respiratory rate, ECG, and body temperature to

comprehensively assess the user's well-being. The personalized hypoxic control system incorporates user feedback and historical data to continuously adapt and optimize hypoxic protocols over time.

[0025] According to an aspect, the interactive training interface provides real-time feedback on user performance and adherence to hypoxic protocols, fostering a user-friendly and motivational training environment. The hypoxic room system further comprising a user-friendly interface for configuring personalized settings, monitoring performance data, and accessing educational content related to hypoxic training and therapy. The environmental control module includes air purification features to ensure the quality of the hypoxic air, minimizing potential contaminants for a safer and more effective hypoxic experience.

[0026] A method for hypoxic training or therapy using a hypoxic room system, includes configuring personalized settings within the hypoxic room system, wherein the reduction in oxygen levels is dynamically adjusted based on individual parameters, including fitness levels, medical history, and desired training intensity, monitoring vital signs in real-time during hypoxic training sessions through an integrated physiological monitoring system, tracking parameters such as heart rate, blood pressure, and oxygen saturation levels, engaging with an interactive training interface provided by the hypoxic room system, receiving guidance, coaching, and motivational content during hypoxic training sessions, with the option of incorporating virtual reality or augmented reality elements, participating in adaptive hypoxic training programs offered by the hypoxic room system, selecting protocols tailored to different sports, activities, and fitness levels to ensure a personalized and optimized training experience, utilizing an environmental control module to regulate temperature, humidity, and ventilation within the hypoxic room, maintaining optimal environmental conditions for enhanced comfort and preventing adverse effects related to changes in altitude simulation, remotely accessing hypoxic room data and participating in telemedicine consultations through the integrated telemedicine capabilities of the hypoxic room system, facilitating remote monitoring and consultation with healthcare professionals,

adjusting hypoxic protocols over time based on user feedback and historical data, utilizing a personalized hypoxic control system that continuously adapts to optimize the hypoxic training or therapy experience, providing real-time feedback on user performance and adherence to hypoxic protocols through the interactive training interface, fostering a user-friendly and motivational training environment, configuring the hypoxic room system through a user-friendly interface for setting personalized parameters, monitoring performance data, and accessing educational content related to hypoxic training and therapy, and executing the hypoxic training or therapy method using the hypoxic room system, wherein the method enhances athletic performance, provides therapeutic benefits, and ensures a safe and effective hypoxic experience.

[0027] According to an aspect, the method further comprising the step of activating or deactivating specific features within the modular hypoxic room system, including personalized hypoxic control, physiological monitoring, environmental control, performance tracking, telemedicine integration, interactive training interface, and adaptive training programs.

[0028] These and other features will become apparent from the following detailed description of illustrative embodiments thereof, which is to be read in connection with the accompanying drawings. While the invention has been described and shown with reference to the preferred embodiment, it will be apparent that variations might be possible that would fall within the scope of the present invention.

BRIEF DESCRIPTION OF DRAWINGS

[0029] The accompanying illustrations are incorporated into and form a part of this specification in order to aid in comprehending the current disclosure. The pictures demonstrate exemplary implementations of the current disclosure and, along with the description, assist to clarify its fundamental ideas.

[0030] Fig.1 illustrates working model of the method for advanced hypoxic room system for optimal training and therapy.

[0031] It should be noted that the figures are not drawn to scale, and the elements of similar structure and functions are generally represented by like reference numerals for illustrative purposes throughout the figures. It should be noted that the figures do not illustrate every aspect of the described embodiment sand do not limit the scope of the present disclosure.

[0032] Other objects, advantages, and novel features of the invention will become apparent from the following detailed description of the present embodiment when taken in conjunction with the accompanying drawings.

DETAILED DESCRIPTION OF THE INVENTION

[0033] While the present invention is described herein by way of example using embodiments and illustrative drawings, those skilled in the art will recognize that the invention is not limited to the embodiments of drawing or drawings described and are not intended to represent the scale of the various components. Further, some components that may form a part of the invention may not be illustrated in certain figures, for ease of illustration, and such omissions do not limit the embodiments outlined in any way. It should be understood that the drawings and the detailed description thereto are not intended to limit the invention to the particular form disclosed, but on the contrary, the invention is to cover all modifications, equivalents, and alternatives falling within the scope of the present invention as defined by the appended claim.

[0034] As used throughout this description, the word "may" is used in a permissive sense (i.e. meaning having the potential to), rather than the mandatory sense, (i.e. meaning must). Further, the words "a" or "an" mean "at least one" and the word "plurality" means "one or more" unless otherwise mentioned. Furthermore, the terminology and phraseology used herein are solely used for descriptive purposes and should not be construed as limiting in scope. Language such as "including," "comprising," "having," "containing," or "involving," and variations thereof, is intended to be broad and encompass the subject matter listed thereafter, equivalents, and additional subject matter not recited, and is not intended

to exclude other additives, components, integers, or steps. Likewise, the term "comprising" is considered synonymous with the terms "including" or "containing" for applicable legal purposes. Any discussion of documents acts, materials, devices, articles, and the like are included in the specification solely for the purpose of providing a context for the present invention. It is not suggested or represented that any or all these matters form part of the prior art base or were common general knowledge in the field relevant to the present invention.

[0035] In this disclosure, whenever a composition or an element or a group of elements is preceded with the transitional phrase “comprising”, it is understood that we also contemplate the same composition, element, or group of elements with transitional phrases “consisting of”, “consisting”, “selected from the group of consisting of, “including”, or “is” preceding the recitation of the composition, element or group of elements and vice versa.

[0036] The present invention is described hereinafter by various embodiments with reference to the accompanying drawing, wherein reference numerals used in the accompanying drawing correspond to the like elements throughout the description. This invention may, however, be embodied in many different forms and should not be construed as limited to the embodiment set forth herein. Rather, the embodiment is provided so that this disclosure will be thorough and complete and will fully convey the scope of the invention to those skilled in the art. In the following detailed description, numeric values and ranges are provided for various aspects of the implementations described. These values and ranges are to be treated as examples only and are not intended to limit the scope of the claims. In addition, several materials are identified as suitable for various facets of the implementations.

[0037] The present invention relates to the hypoxic room systems used for training and therapy. The system aims to simulate low-oxygen conditions found at high altitudes to provide a controlled environment for optimal training and therapeutic purposes. The invention incorporates advanced features such as personalized hypoxic control, integrated physiological monitoring, environmental

control, performance tracking, telemedicine integration, interactive training interface, adaptive training programs, and a hypoxic room network.

[0038] The advanced hypoxic room system for optimal training and therapy includes a personalized hypoxic control system, wherein the reduction in oxygen levels is dynamically adjusted based on individual parameters, including but not limited to fitness levels, medical history, and desired training intensity, an integrated physiological monitoring system that tracks vital signs, including heart rate, blood pressure, and oxygen saturation levels in real-time during hypoxic training or therapy sessions, an environmental control module integrated into the hypoxic room system, regulating temperature, humidity, and ventilation to maintain optimal environmental conditions, thereby enhancing user comfort and preventing adverse effects related to changes in altitude simulation, a performance tracking and analysis modules incorporated into the hypoxic room system, measuring athletic performance parameters such as power output, lactate threshold, and endurance during hypoxic training, providing users with data-driven insights into their progress, a telemedicine integration in the hypoxic room system, facilitating remote monitoring and consultation with healthcare professionals, particularly beneficial for individuals undergoing hypoxic therapy for medical purposes, an interactive training interface within the hypoxic room system, offering guidance, coaching, and motivational content during hypoxic training sessions, with the option of incorporating virtual reality or augmented reality elements to enhance user engagement, an adaptive hypoxic training programs provided by the hypoxic room system, offering a suite of protocols tailored to different sports, activities, and fitness levels, ensuring personalized and optimized training experiences for users, and a network of hypoxic rooms accessible to athletes, coaches, and medical professionals, fostering collaboration, data sharing, and the development of standardized hypoxic training protocols.

[0039] According to an aspect, the personalized hypoxic control system utilizes advanced technology, including molecular sieve pressure-swing adsorption or membrane separation, to achieve the desired reduction in oxygen levels. The

physiological monitoring system includes sensors for monitoring additional parameters such as respiratory rate, ECG, and body temperature to comprehensively assess the user's well-being. The personalized hypoxic control system incorporates user feedback and historical data to continuously adapt and optimize hypoxic protocols over time.

[0040] According to an aspect, the interactive training interface provides real-time feedback on user performance and adherence to hypoxic protocols, fostering a user-friendly and motivational training environment. The hypoxic room system further comprising a user-friendly interface for configuring personalized settings, monitoring performance data, and accessing educational content related to hypoxic training and therapy. The environmental control module includes air purification features to ensure the quality of the hypoxic air, minimizing potential contaminants for a safer and more effective hypoxic experience.

[0041] A method for hypoxic training or therapy using a hypoxic room system, includes configuring personalized settings within the hypoxic room system, wherein the reduction in oxygen levels is dynamically adjusted based on individual parameters, including fitness levels, medical history, and desired training intensity, monitoring vital signs in real-time during hypoxic training sessions through an integrated physiological monitoring system, tracking parameters such as heart rate, blood pressure, and oxygen saturation levels, engaging with an interactive training interface provided by the hypoxic room system, receiving guidance, coaching, and motivational content during hypoxic training sessions, with the option of incorporating virtual reality or augmented reality elements, participating in adaptive hypoxic training programs offered by the hypoxic room system, selecting protocols tailored to different sports, activities, and fitness levels to ensure a personalized and optimized training experience, utilizing an environmental control module to regulate temperature, humidity, and ventilation within the hypoxic room, maintaining optimal environmental conditions for enhanced comfort and preventing adverse effects related to changes in altitude simulation, remotely accessing hypoxic room data and participating in telemedicine consultations

through the integrated telemedicine capabilities of the hypoxic room system, facilitating remote monitoring and consultation with healthcare professionals, adjusting hypoxic protocols over time based on user feedback and historical data, utilizing a personalized hypoxic control system that continuously adapts to optimize the hypoxic training or therapy experience, providing real-time feedback on user performance and adherence to hypoxic protocols through the interactive training interface, fostering a user-friendly and motivational training environment, configuring the hypoxic room system through a user-friendly interface for setting personalized parameters, monitoring performance data, and accessing educational content related to hypoxic training and therapy, and executing the hypoxic training or therapy method using the hypoxic room system, wherein the method enhances athletic performance, provides therapeutic benefits, and ensures a safe and effective hypoxic experience.

[0042] According to an aspect, the method further comprising the step of activating or deactivating specific features within the modular hypoxic room system, including personalized hypoxic control, physiological monitoring, environmental control, performance tracking, telemedicine integration, interactive training interface, and adaptive training programs.

[0043] The Advanced Hypoxic Room System for Optimal Training and Therapy is a comprehensive solution designed to create controlled hypoxic environments for users engaging in training or therapy simulating high-altitude conditions. This detailed description covers the technical aspects of the invention, including its core components and additional modules.

[0044] The system incorporates a hypoxicator as its central device, responsible for reducing the oxygen content in the air it provides. This reduction is achieved either through a membrane-based separation method or molecular sieve pressure-swing adsorption. The oxygen control mechanism allows for precise adjustments to create hypoxic conditions within the designated room.

[0045] The hypoxic room features ventilating openings to ensure proper air

circulation while maintaining atmospheric pressure. This is crucial for the comfort and safety of users during hypoxic training or therapy sessions.

[0046] One of the key modules is the Personalized Hypoxic Control system. This module enables the adjustment of oxygen levels based on individual user profiles. Factors such as fitness levels, medical history, and desired training intensity are considered, providing a customized hypoxic experience.

[0047] To enhance user safety, the system integrates physiological monitoring sensors. These sensors continuously track vital signs, including heart rate, blood pressure, and oxygen saturation levels. Real-time monitoring ensures prompt response to any adverse physiological reactions.

[0048] The Environmental Control Module regulates temperature, humidity, and ventilation within the hypoxic room. Maintaining optimal environmental conditions enhances user comfort and prevents potential discomfort associated with changes in altitude simulation.

[0049] The system incorporates performance tracking and analysis software to measure various athletic performance parameters during hypoxic training. Parameters such as power output, lactate threshold, and endurance are monitored and analyzed, providing users and professionals with valuable insights.

[0050] Telemedicine capabilities are integrated to allow remote monitoring and consultation with medical professionals. This feature is particularly useful for users with underlying health conditions or those undergoing hypoxic therapy for medical purposes.

[0051] The invention includes an interactive training interface providing guidance, coaching, and motivational content during hypoxic sessions. Virtual reality or augmented reality elements may be incorporated to enhance user engagement and immersion.

[0052] The suite of adaptive hypoxic training programs is created, tailored to

different sports, activities, and fitness levels. These programs optimize the training process and maximize desired outcomes based on individual goals.

[0053] The invention envisions a network of hypoxic rooms accessible to athletes, coaches, and medical professionals. This network encourages collaboration, data sharing, and the development of standardized hypoxic training protocols.

[0054] While the foregoing describes various embodiments of the invention, other and further embodiments of the invention may be devised without departing from the basic scope thereof. The scope of the invention is determined by the claims that follow. The invention is not limited to the described embodiments, versions or examples, which are included to enable a person having ordinary skill in the art to make and use the invention when combined with information and knowledge available to the person having ordinary skill in the art.

[0055] Thus, the scope of the present disclosure is defined by the appended claims and includes both combinations and sub-combinations of the various features described hereinabove as well as variations and modifications thereof, which would occur to persons skilled in the art upon reading the foregoing description.

CLAIMS

I/We Claim:

1. An advanced hypoxic room system for optimal training and therapy comprising:

a personalized hypoxic control system, wherein the reduction in oxygen levels is dynamically adjusted based on individual parameters, including but not limited to fitness levels, medical history, and desired training intensity;

an integrated physiological monitoring system that tracks vital signs, including heart rate, blood pressure, and oxygen saturation levels in real-time during hypoxic training or therapy sessions;

an environmental control module integrated into the hypoxic room system, regulating temperature, humidity, and ventilation to maintain optimal environmental conditions, thereby enhancing user comfort and preventing adverse effects related to changes in altitude simulation;

a performance tracking and analysis modules incorporated into the hypoxic room system, measuring athletic performance parameters such as power output, lactate threshold, and endurance during hypoxic training, providing users with data-driven insights into their progress;

a telemedicine integration in the hypoxic room system, facilitating remote monitoring and consultation with healthcare professionals, particularly beneficial for individuals undergoing hypoxic therapy for medical purposes;

an interactive training interface within the hypoxic room system, offering guidance, coaching, and motivational content during hypoxic training sessions, with the option of incorporating virtual reality or augmented reality elements to enhance user engagement;

an adaptive hypoxic training programs provided by the hypoxic room system, offering a suite of protocols tailored to different sports, activities, and fitness levels, ensuring personalized and optimized training experiences for users; and

a network of hypoxic rooms accessible to athletes, coaches, and medical professionals, fostering collaboration, data sharing, and the development of standardized hypoxic training protocols.

2. The hypoxic room system of claim 1, wherein the personalized hypoxic control system utilizes advanced technology, including molecular sieve pressure-swing adsorption or membrane separation, to achieve the desired reduction in oxygen levels.

3. The hypoxic room system of claim 1, wherein the physiological monitoring system includes sensors for monitoring additional parameters such as respiratory rate, ECG, and body temperature to comprehensively assess the user's well-being.

4. The hypoxic room system of claim 1, wherein the personalized hypoxic control system incorporates user feedback and historical data to continuously adapt and optimize hypoxic protocols over time.

5. The hypoxic room system of claim 1, wherein the interactive training interface provides real-time feedback on user performance and adherence to hypoxic protocols, fostering a user-friendly and motivational training environment.

6. The hypoxic room system of claim 1, further comprising a user-friendly interface for configuring personalized settings, monitoring performance data, and accessing educational content related to hypoxic training and therapy.

7. The hypoxic room system of claim 1, wherein the environmental control module includes air purification features to ensure the quality of the hypoxic air, minimizing potential contaminants for a safer and more effective hypoxic experience.

8. A method for hypoxic training or therapy using a hypoxic room system, comprising the steps of:

configuring personalized settings within the hypoxic room system, wherein the reduction in oxygen levels is dynamically adjusted based on individual

parameters, including fitness levels, medical history, and desired training intensity;

monitoring vital signs in real-time during hypoxic training sessions through an integrated physiological monitoring system, tracking parameters such as heart rate, blood pressure, and oxygen saturation levels;

engaging with an interactive training interface provided by the hypoxic room system, receiving guidance, coaching, and motivational content during hypoxic training sessions, with the option of incorporating virtual reality or augmented reality elements;

participating in adaptive hypoxic training programs offered by the hypoxic room system, selecting protocols tailored to different sports, activities, and fitness levels to ensure a personalized and optimized training experience;

utilizing an environmental control module to regulate temperature, humidity, and ventilation within the hypoxic room, maintaining optimal environmental conditions for enhanced comfort and preventing adverse effects related to changes in altitude simulation;

remotely accessing hypoxic room data and participating in telemedicine consultations through the integrated telemedicine capabilities of the hypoxic room system, facilitating remote monitoring and consultation with healthcare professionals;

adjusting hypoxic protocols over time based on user feedback and historical data, utilizing a personalized hypoxic control system that continuously adapts to optimize the hypoxic training or therapy experience;

providing real-time feedback on user performance and adherence to hypoxic protocols through the interactive training interface, fostering a user-friendly and motivational training environment;

configuring the hypoxic room system through a user-friendly interface for setting personalized parameters, monitoring performance data, and accessing educational content related to hypoxic training and therapy; and

executing the hypoxic training or therapy method using the hypoxic room system, wherein the method enhances athletic performance, provides therapeutic benefits, and ensures a safe and effective hypoxic experience.

9. The method of claim 1, further comprising the step of activating or deactivating specific features within the modular hypoxic room system, including personalized hypoxic control, physiological monitoring, environmental control, performance tracking, telemedicine integration, interactive training interface, and adaptive training programs.

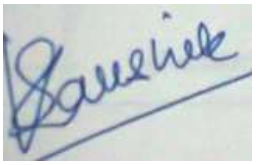
ABSTRACT

"ADVANCED HYPOXIC ROOM SYSTEM FOR OPTIMAL TRAINING AND THERAPY"

The present invention pertains to an advanced hypoxic room system designed for optimal training and therapy, simulating low-oxygen conditions akin to high altitudes. The system employs a hypoxicator to regulate oxygen levels, creating a controlled environment for hypoxic experiences. Enhanced by personalized hypoxic control, integrated physiological monitoring, environmental regulation, performance tracking, telemedicine integration, an interactive training interface, and adaptive training programs, this modular system ensures a user-centric approach. It caters to athletes, fitness enthusiasts, and those requiring therapeutic hypoxia, fostering safety, efficiency, and user engagement. The invention signifies a comprehensive solution in hypoxic training and therapy, amalgamating technology, customization, and versatility.

Fig. 1

Dated this: 9th day of December, 2023



Somya Kaushik
AGENT FOR THE APPLICANT
IN/PA/5019

Applicant Name:

Application Number:

Total No. of Sheets: 1
Sheet No. 1

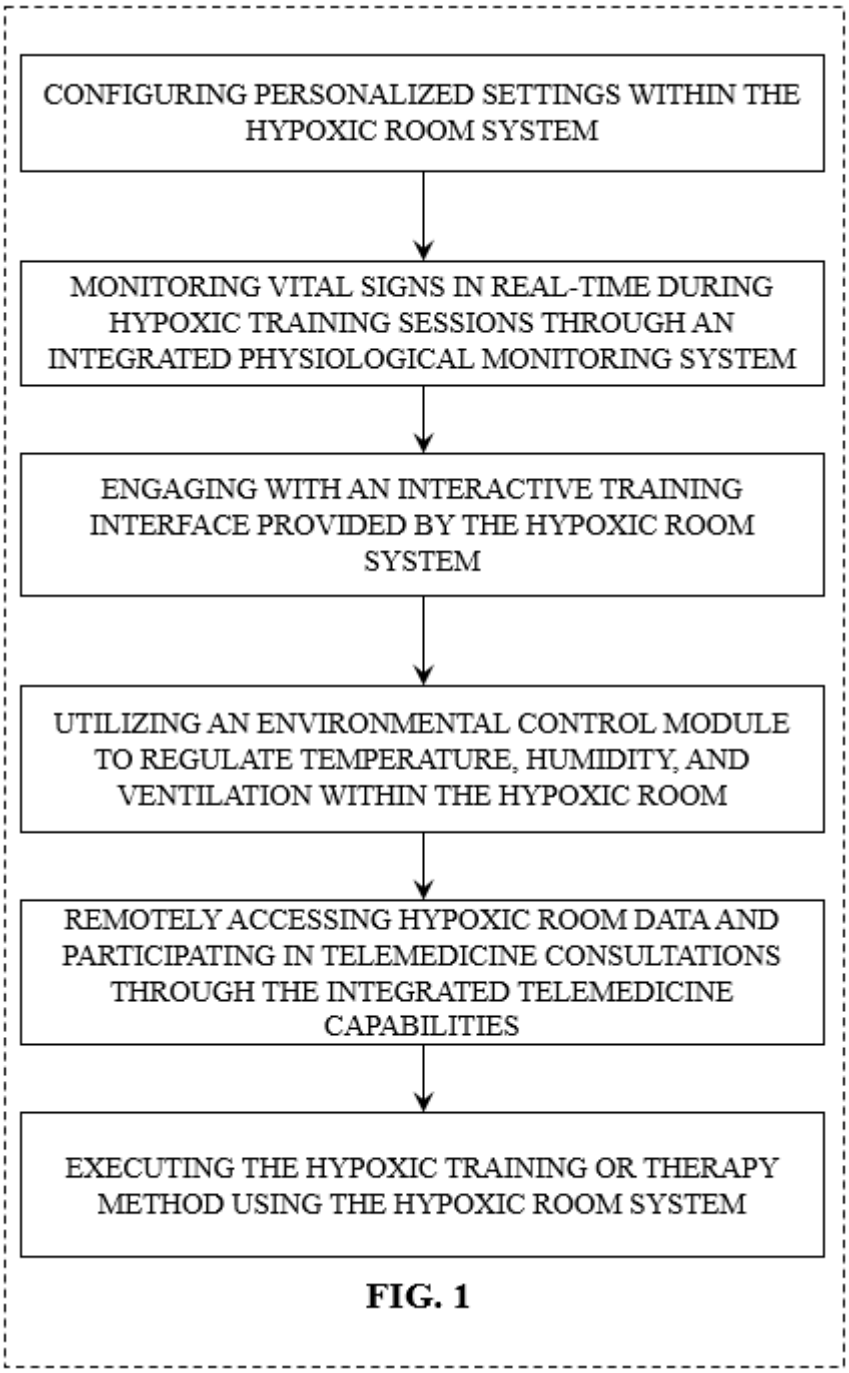


FIG. 1

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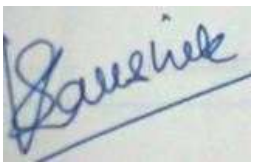

Somya Kaushik
AGENT FOR THE APPLICANT
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Signature Not Verified
Digitally Signed.
Name: Somya Kaushik
Date: 09-Dec-2023 15:41:09
Reason: Patent Efiling
Location: DELHI

FORM 1 THE PATENTS ACT 1970 (39 OF 1970) and THE PATENTS RULES, 2003 **APPLICATION FOR GRANT OF PATENT** (See section 7, 54 and 135 and rule sub rule (1) of rule 20)	(FOR OFFICE USE ONLY)	
	Application No.:	
	Filing Date:	
	Amount of Fee Paid:	
	CBR No:	
	Signature:	

1. **APPLICANT'S REFERENCE / IDENTIFICATION NO. (AS ALLOTED BY THE OFFICE)**	

2. **TYPE OF APPLICATION**

Ordinary (✓)		Convention ( )		PCT – NP ( )	
Divisional ( )	Patent of Addition ( )	Divisional ( )	Patent of Addition ( )	Divisional ( )	Patent of Addition ( )

3 A. APPLICANT(S)

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			State	Tamil Nadu
			Country	India
			Pin Code	603203
Name in Full	Nationality	Country of Residence	Address of the Applicant	
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			Street	Doctoral Research Fellow, Department of Physical Education and Sports Sciences, Faculty of Science and Humanities, SRM Institute of Science and Technology, Kattankulathur, Tamil Nadu, India.
			City	Kattankulathur
			State	Tamil Nadu
			Country	India
			Pin Code	603203

3 B. CATEGORY OF APPLICANT

Natural Person ()	Other than Natural Person		
	Small Entity ( )	Startup ( )	Other (✓)

4. INVENTOR(S)

Are all the inventor(s) same as the applicant(s) named above?	Yes (✓)	No ()

If "No" furnish the details of the inventor(s)

5. TITLE OF THE INVENTION -

"ADVANCED HYPOXIC ROOM SYSTEM FOR OPTIMAL TRAINING AND THERAPY"

6. AUTHORISED REGISTERED PATENT AGENT(S)	INPA NO.	5019
	Name	Ms. Somya Kaushik
	Mobile No.:	+91 9582649699

7. ADDRESS FOR SERVICE OF APPLICANT IN INDIA	Name	**Elpis Analytix**
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	Telephone No.	NA
	Mobile No.	+91 9582649699
	Fax No.	NA
	Email ID	contact@elpisanalytix.com, ipr.elpisanalytix@gmail.com

8. IN CASE OF APPLICATION CLAIMING PRIORITY OF APPLICATION FILED IN CONVENTION COUNTRY, PARTICULARS OF CONVENTION APPLICATION

Country	Application Number	Filing Date	Name of the Applicant	Title of the Invention	IPC (as classified in the convention country
NA	NA	NA	NA	NA	NA

9. IN CASE OF PCT NATIONAL PHASE, PARTICULARS OF INTERNATIONAL APPLICATION FILED

UNDER PATENT CO-OPERATION TREATY (PCT)	
International Application Number	International filing date
NA	NA

10. IN CASE OF DIVISIONAL APPLICATION FILED UNDER SECTION 16, PARTICULARS OF ORIGINAL (FIRST) APPLICATION

Original (first) application no.	Date of filing of Original (first) application
NA	NA

11. IN CASE OF PATENT OF ADDITION FILED UNDER SECTION 54, PARTICULARS OF MAIN APPLICATION OR PATENT

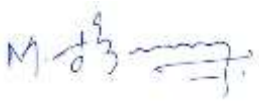
Main application/patent no.	Date of filing of main application
NA	NA

12. DECLARATIONS

(i) Declaration by the inventor(s):

I, the above-named inventor is the true & first inventor for this invention and declare that the applicant herein is my assignee or legal representative.

a) Date: 8th day of December, 2023



1. Signature:
   Name: Prof. M. Elayaraja

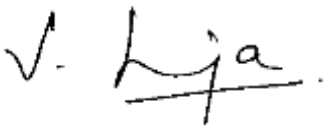
2. Signature:
   Name: Prof. Arvind Malik

3. Signature:
   Name: Prof. R. Mohana Krishnan

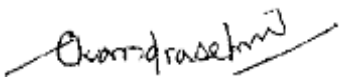
4. Signature:
   Name: Dr. M. Senthil Kumar

5. Signature:
   Name: Dr. M. Mahalingam

6. Signature:
   Name: Dr. P. Kumaravelu



7. Signature:
Name: Prof. S. Saroja



8. Signature
Name: Dr. S. Jayasingh Albert Chandrasekar

9. Signature:
Name: Dr. M. Siva

10. Signature
Name: Mr. K. Govindasamy

(ii) Declaration by the applicant(s) in the convention country

I, the applicant in the convention country declare that the applicant herein is my assignee or legal representative.

a) Date: _____ NA _____
b) Signature: _____ NA _____
c) Name of the signatory: NA

(iii) Declaration by the applicant:

I/We, the applicant(s) hereby declare(s) that:-

[✓] I am in possession of the above mentioned invention.

[✓] The complete specification relating to the invention is filled with this application.

[ ] The invention as disclosed in the specification uses the biological material from India and the necessary permission from the competent authority shall be submitted by me before the grant of patent to me.

[✓] There is no lawful ground of objection to the grant of patent to me.

[ ] I am the true and first Inventor.

[✓] I am the assignee or legal representative of true & first inventor.

[ ] The application or each of the applications, particulars of which are given in Paragraph-8 was the first application in convention country/countries in respect of my invention.

[ ] I claim the priority from the above mentioned application(s) filed in convention country/countries and state that no application for protection in respect of invention had been made in a convention country before that date by me or by any person from which I derive the title.

[ ] My application in India is based on International Application under Patent Cooperation Treaty (PCT) as mentioned in Paragraph-9.

[ ] The application is divided out of my application particulars of which is given in paragraph-10 and pray that this application may be treated as deemed to have been filed on _____under section 16 of the Act.

[ ] The said invention is an improvement in or modification of the invention particulars of which are given in Paragraph-11.

13. FOLLOWING ARE THE ATTACHMENTS WITH THE APPLICATION

a) Form 2

Item	Details	Fee	Remarks
Complete Specification	No. of Pages: 14	--	--
No. of Claim(s)	No. of Claims: 9 and No. of Pages: 02	--	--
Abstract	No. of Page: 01	--	--
Drawing(s)	No. of Drawings: 01 and No. of Pages: 01	--	--

b) Complete specification (in confirmation with the international application)/as amended before the International Preliminary Examination Authority (IPEA), as applicable,
c) Drawings (in confirmation with the international application)/as amended before the International Preliminary Examination Authority (IPEA), as applicable,
d) Statement and undertaking on Form-3,
e) Declaration of Inventorship on Form-5,
f) Copy of International Application Status Report,
g) Copy of Notification of receipt of record copy (PCT/IB/301),
h) Copy of Notification Concerning Submission or Transmittal of Priority Document (PCT/IB/304),
i) Copy of International Search Report,

Deposit of Total Fee_____1600_____

I hereby declare that to the best of my knowledge, information and belief the facts and matters stated herein are correct and I request that a patent may be granted to me for the said invention.

Dated this: 8th day of December, 2023

1. Signature:
Name: Prof. M. Elayaraja

2. Signature:
Name: Prof. Arvind Malik

3. Signature:
Name: Prof. R. Mohana Krishnan

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5. Signature:
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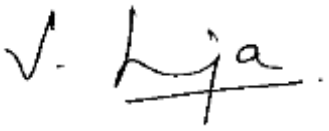
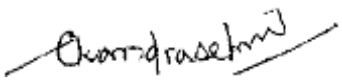
6. Signature:
Name: Dr. P. Kumaravelu





7. Signature:
Name: Prof. S. Saroja

8. Signature
Name: Dr. S. Jayasingh Albert Chandrasekar

9. Signature:
Name: Dr. M. Siva

10. Signature
Name: Mr. K. Govindasamy

Somya Kaushik
AGENT FOR THE APPLICANT
IN/PA/5019

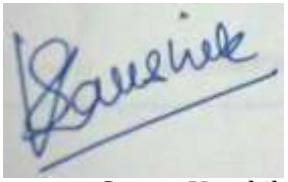
To,
The Controller of Patents,
The Patent Office,
at New Delhi

FORM–9

THE PATENTS ACT, 1970
(39 of 1970)
&
THE PATENTS RULES, 2003
Request for Publication
[See Section 11A (2) and Rule 24A]

We, **Prof. M. Elayaraja**, an Indian Citizen having registered address at **Professor and Director i/c, Department of Physical Education and Sports, Pondicherry University, Puducherry, India. Kalapet Puducherry 605014**; **Prof.Arvind Malik** an Indian Citizen having registered address at **Professor and Dean Department of Physical Education Kurukshetra University, Kurukshetra.; Prof. R. Mohana Krishnan** an Indian Citizen having registered address at Professor & Director Directorate of Sports SRM Institute of Science and Technology, Kattankulathur, Tamil Nadu, India.**; Dr.M.Senthil Kumar** an Indian Citizen having registered address at Associate Professor & Head Department of Yoga, Faculty of Science and Humanities, SRM Institute of Science and Technology, Kattankulathur, Tamil Nadu, India.**; Dr.M.Mahalingam** an Indian Citizen having registered address at **Professor & Head (Additional) Department of Physical Education & Sports, Association Convener, MagicEvents, Dr.M.G.R Educational and Research Institute, Deemed to be University, Maduravoyal, Chennai.; Dr.P.Kumaravelu** an Indian Citizen having registered address at **Associate Professor, Department of Physical Education, Tamil Nadu Physical Education and Sports University, Mellakottaiyur, Tamil Nadu, India.; Prof.S.Saroja** an Indian Citizen having registered address at Professor cum Coordinator, Centre for Yoga Education, Alagappa University, Karaikudi**,; Dr.S.Jayasingh Albert Chandrasekar** an Indian Citizen having registered address at Associate Professor & Head Department of Physical Education and Sports Sciences, Faculty of Science and Humanities, SRM Institute of Science and Technology, Kattankulathur, Tamil Nadu, India.; **Dr.M.Siva** Assistant Professor, Department of Physical Education and Sports Sciences, Faculty of Science and Humanities, SRM Institute of Science and Technology, Kattankulathur, Tamil Nadu, India.**; Mr.K.Govindasamy,** Doctoral Research Fellow, Department of Physical Education and Sports Sciences, Faculty of Science and Humanities, SRM Institute of Science and Technology, Kattankulathur, Tamil Nadu, India.; hereby request for early publication of our Patent Application no.datedunder section 11A (2) of the Act.

Dated this 9th day of December, 2023



Somya Kaushik
AGENT FOR THE APPLICANT
IN/PA/5019

To,
The Controller of Patents,
The Patent Office,
at Delhi

Office of the Controller General of Patents, Designs & Trade Marks
Department for Promotion of Industry and Internal Trade
Ministry of Commerce & Industry,
Government of India

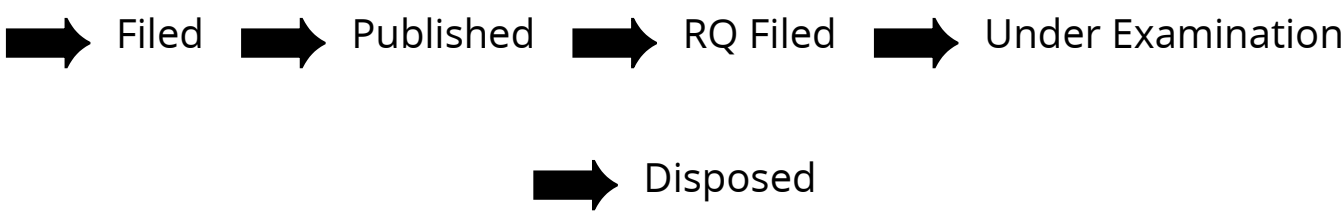
(http://ipindia.nic.in/index.htm)

(http://ipindia.nic.in/index.htm)

Application Details	
APPLICATION NUMBER	202341055036
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	16/08/2023
APPLICANT NAME	1 . Mr. T. Loganathan 2 . Dr. R. Ramakrishnan 3 . Dr. Muralidhar B A 4 . Dr. G. Nallavan 5 . Mr. Akshayaraman M
TITLE OF INVENTION	Design and Development of Sustainable Sports shoes using natural Plant based alternative
FIELD OF INVENTION	COMPUTER SCIENCE
E-MAIL (As Per Record)	03mrmanoj@gmail.com
ADDITIONAL-EMAIL (As Per Record)	03mrmanoj@gmail.com
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	--
PUBLICATION DATE (U/S 11A)	01/09/2023

Application Status	
APPLICATION STATUS	Awaiting Request for Examination

View Documents



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FORM 2

THE PATENTS ACT 1970

(39 of 1970)

&

The Patent Rules 2003

COMPLETE SPECIFICATION

(See section 10 and rule 13)

TITLE OF THE INVENTION

"Design and Development of Sustainable Sports shoes using natural Plant based alternative"

We, applicant(s)

NAME	**NATIONALITY**	**ADDRESS**
1. Mr. T. Loganathan	Indian	Faculty- Manufacturing Excellent in the Department of SFDP, FDDI, An Institute of National Importance, Ministry of Commerce & Industry, GOI, Hyderabad, Telangana, India, Pincode:500008
2. Dr. R. Ramakrishnan	Indian	Professor & Head, Department of Sports Technology, Tamilnadu Physical Education and Sports University, Chennai, Tamilnadu, India, Pincode: 600127
3. Dr. Muralidhar B A	Indian	Assistant Professor (Sl. Gr.), Department of Textile Technology,

		ACTECH-University Department of Anna University, Chennai, Tamilnadu, India, Pincode: 600025
4. Dr. G. Nallavan	Indian	Associate Professor, Department of Sports Technology, Tamilnadu Physical Education and Sports University, Chennai, Tamilnadu, India, Pincode: 600127
5. Mr. Akshayaraman M	Indian	Scientist, Honorary Faculty - Anna University, Design & Fashion Studio, CSIR-Central Leather Research Institute, Adyar, Chennai, Tamilnadu, India, Pincode:600020

The following specification particularly describes the nature of the invention and the manner in which it is performed:

FIELD OF THE INVENTION

The field of invention pertains to the development, design, and manufacturing of sustainable footwear using plant-based alternatives to traditional animal leather. It involves the utilization of materials such as Muskin (Mushroom Leather alternative), Piñatex (Pineapple Leather alternative), Mango Leather alternative, Coconut water Leather alternative, and other vegan leathers alternative. The invention focuses on environmental sustainability, cruelty-free production, and incorporation into fashion and athletic products such as dress and sports

Background of the invention:

The background of the invention finds its roots in the critical examination of traditional leather production and the associated negative environmental and ethical impacts. Leather, derived from animal hides, has been an essential material in various industries, particularly in the footwear sector. However, the conventional process of tanning and manufacturing leather has raised serious concerns about its effect on the environment and animal welfare.

Leather manufacturing is known for consuming large quantities of water and producing toxic sludge that contains harmful elements such as lead, arsenic, chromium, and acids. These hazardous components pose significant risks to the workers involved and the surrounding environment. The demand for cruelty-free products has also grown, calling into question the ethics of using animal hides for fashion and other commercial purposes.

With a burgeoning awareness of these issues, the search for sustainable and ethical alternatives has become a vital pursuit in contemporary material science and fashion. Researchers, innovators, and designers have embarked on a journey to develop suitable substitutes that mimic the characteristics of animal leather without the associated negative impacts. The result is a range of plant-based alternatives like Muskin from mushrooms, Piñatex from pineapple leaves, leather from coconut water, and more.

These plant-based alternatives have begun to gain traction in the footwear industry, particularly in the production of sports and dress shoes. The environmental benefits of these materials are manifold; they are not only free from animal products but are often biodegradable, renewable, and less resource-intensive to produce. Several of these materials even utilize agricultural by-products, further enhancing their sustainability.

High-fashion brands and mainstream retailers are increasingly turning to these plant-based leathers, driven by a blend of consumer demand, environmental stewardship, and innovative design possibilities. Furthermore, the application of these materials extends beyond aesthetics; they can possess unique qualities such as breathability, resilience, and comfort, making them well-suited for various types of footwear.

However, the journey towards perfecting these leather alternatives has not been without challenges. Issues related to mechanical integrity, bonding with other materials, and hydroscopic nature have been reported in various studies. Continuous research and

development efforts are necessary to overcome these barriers and create products that not only rival traditional leather in performance but exceed it in ethical and environmental terms.

The invention in focus aims to address these challenges by offering a comprehensive method and system for designing and manufacturing eco-friendly, plant-based leather footwear for sports and dress shoes. By integrating the principles of circular economy, biodegradability, and animal-free production, this invention stands as a testament to the future of sustainable fashion and represents a significant step forward in redefining the relationship between style, ethics, and environmental consciousness. It serves as a bridge between the vision of a more sustainable future and the tangible reality of products that embody these values.

The need to address the aforementioned challenges related to plant-based leather became the driving force behind a collaborative effort involving scientists, engineers, designers, and environmentalists.

The inception of this innovative journey began with the quest to understand the molecular structure of traditional leather and its plant-based counterparts. By employing advanced imaging techniques and chemical analyses, researchers were able to map the microstructure of different plant-based materials. This allowed for a more informed selection of raw materials and the development of specialized processing techniques tailored to the unique properties of each plant-based source.

The invention also pioneered new methods of bonding, weaving, and treating plant-based leathers, taking into consideration their hygroscopic nature, flexibility, and strength. Collaborations with agricultural partners were established to ensure a consistent and sustainable supply of raw materials, often reusing waste products from other industries.

In terms of aesthetics and functionality, designers played a crucial role in marrying the scientific innovations with the artistic flair required for fashion-forward footwear. The design phase was marked by a willingness to push boundaries, embracing the unique textures and finishes that plant-based leathers could offer.

Quality assurance was another critical component of the invention process. New standards and testing protocols were developed to ensure that the plant-based leather footwear met or exceeded the performance characteristics of traditional leather products. This involved rigorous evaluations of wear resistance, moisture management, comfort, and overall durability. The result was a line of footwear that not only looked appealing but performed exceptionally well in various conditions.

The ethical implications of the invention were not confined to the product alone. A holistic approach was taken to consider the entire lifecycle of the footwear, from raw material sourcing to production, retail, and eventual disposal. Energy-efficient manufacturing processes were adopted, and recyclable or biodegradable components were prioritized. The invention also

embraced fair labor practices, fostering a working environment that recognized and rewarded the contributions of all involved.

Marketing and consumer engagement played vital roles in introducing this innovative footwear to the public. Educational campaigns were launched to raise awareness of the environmental and ethical advantages of plant-based leather. These efforts were bolstered by collaborations with influencers and celebrities who shared a commitment to sustainability.

Finally, the commercial success of the invention stands as a testament to the power of innovative thinking coupled with ethical and environmental responsibility. The plant-based leather footwear line has not only become a fashionable choice among conscious consumers but has ignited a broader movement within the industry. It has paved the way for more widespread adoption of sustainable materials and practices, encouraging other brands and manufacturers to explore similar paths. Some patent prior art related to proposed invention mentioned below.

Patent Title: "Method for Producing Plant-Based Leather Material"

Patent Number: US8932567B2

Summary: This patent describes a method for producing leather-like material from plant fibers, including treating plant fibers with natural enzymes. It also outlines techniques for

giving texture to the material. However, it does not specifically target the application of footwear or sports shoes.

Patent Title: "Eco-Friendly Footwear Using Organic and Recycled Materials"

Patent Number: US8104448B1

Summary: This invention pertains to the use of organic and recycled materials in the construction of footwear, including the use of natural fibers. It does not describe the particular method for creating plant-based leather, focusing instead on overall shoe design and the inclusion of sustainable elements.

Patent Title: "Biodegradable Shoes Made from Natural Fibers"

Patent Number: EP2846156A1

Summary: This European patent involves the production of biodegradable shoes using natural fibers, but does not include the specific process of turning plant-based materials into leather-like substances. It might be relevant for the construction of the shoe, but not directly for the plant-based leather development.

Patent Title: "Sustainable Footwear Using Hemp and Bamboo Fibers"

Patent Number: US9724237B2

Summary: This patent describes footwear made from sustainable materials like hemp and bamboo fibers, but it does not specifically outline the leather-like treatment of these fibers. The focus of this patent is more on the end-product and the use of certain sustainable materials rather than the process of mimicking leather.

Patent Title: "Footwear with Recycled Material and Footbed Technology"

Patent Number: US9345721B2

Summary: This invention outlines a unique footbed technology that includes recycled material and provides methods for manufacturing the footwear. While it emphasizes sustainability, it does not delve into the creation or use of plant-based leather materials.

Patent Title: "Processing Plant Fibers into Leather-Like Material"

Patent Number: WO2017134891A1

Summary: This World Intellectual Property Organization patent discusses the detailed process of turning plant fibers into leather-like material through a series of chemical treatments. Though it does not specify the application for sports shoes, the process could be relevant to the proposed invention's goals.

Patent Title: "Plant-Based Resins for Footwear Construction"

Patent Number: US8765234B2

Summary: This patent focuses on utilizing plant-based resins as adhesives or binding agents in footwear construction. Although not directly related to plant-based leather, it could be relevant to the proposed invention in terms of creating a completely sustainable shoe using environmentally friendly components.

Patent Title: "Sustainable Footwear Manufacturing Using Solar Energy"

Patent Number: US9475653B1

Summary: This invention outlines a method of manufacturing footwear using renewable energy, specifically solar power. While not directly addressing plant-based leather, the patent provides insight into other sustainability factors that might complement the proposed invention.

Patent Title: "Footwear with Integrated Waste Material Utilization"

Patent Number: EP2910725A1

Summary: This patent describes a method of integrating waste materials into footwear construction, including potentially utilizing agricultural waste as part of the shoe fabrication process. The concept of recycling or reusing waste materials might intersect with the proposed invention's goals of using plant-based materials.

Patent Title: "Water-Based Adhesive Process in Footwear Assembly"

Patent Number: CN108210567A

Summary: This Chinese patent discusses the use of water-based adhesives in shoe assembly, avoiding harmful solvents and contributing to the eco-friendliness of the product. While not dealing with plant-based leather, the concepts of environmental consciousness and non-toxic processing could have overlaps with the proposed invention.

Patent Title: "3D Printing Technology for Sustainable Footwear Production"

Patent Number: US9827110B2

Summary: This patent covers the utilization of 3D printing technology in the creation of sustainable footwear, including the possibility of using biodegradable or plant-based materials. This technological approach might be an avenue to explore in conjunction with the proposed invention's aim of developing plant-based leather sports shoes.

Summary of the proposed invention:

The proposed invention pertains to a novel method of designing and manufacturing footwear using plant-based leather materials. The key aspects of this invention center around the innovative sourcing, treatment, and fabrication of plant-derived fibers to create a leather-like material that has both the aesthetics and durability of traditional leather.

One of the invention's unique features is the sustainable sourcing of raw materials, leveraging agricultural waste or other renewable resources. The treatment process emphasizes chemical and physical modifications to achieve a texture, appearance, and wear-resistance akin to conventional leather. Special attention is also given to various design elements, potentially including decorative patterns, colours, and styles, making the footwear appealing to diverse consumer tastes.

Another distinctive aspect of the invention is its focus on sustainability and environmental considerations. The method includes energy-efficient production processes and may offer options for recycling or biodegrading the end product. Moreover, the use of non-animal-based materials aligns with growing consumer interest in eco-friendly and cruelty-free products.

By combining these features, the proposed invention aims to provide a groundbreaking approach to footwear, potentially revolutionizing the industry with a blend of sustainability, style, and performance.

Brief description of the proposed invention:

In the rapidly evolving landscape of the fashion and footwear industry, the constant demand for innovation and sustainability has pushed boundaries and reshaped traditional norms. The proposed invention emerges as a trailblazing solution, meticulously designed to address both

these needs: innovation in material and design, coupled with a heightened focus on ecological responsibility.

At its core, the invention proposes a method of conceptualizing, designing, and producing footwear utilizing predominantly plant-based leather materials. Drawing inspiration from the rich variety of renewable plant resources, the invention identifies potential candidates such as mushroom mycelium, pineapple leaves, and others as the primary constituents for creating a leather-like substance. Notably, these plant-derived materials are not just abundantly available, but their procurement often aids in reducing agricultural waste, showcasing the holistic eco-friendly approach of the invention from the very outset.

Upon sourcing, these plant materials undergo a series of chemical and physical treatments. The objective here is multifaceted: to first transform these raw, often coarse materials into textures and appearances that mimic traditional leather, and subsequently to enhance their intrinsic properties to ensure durability, flexibility, and comfort, akin to what consumers expect from premium footwear. This meticulous process also focuses on ensuring that the materials remain breathable, an essential characteristic for footwear.

Design-wise, the invention doesn't confine itself to merely replicating existing styles. Instead, it leverages the unique properties and aesthetics of plant-based materials to inspire innovative designs. The natural hues of the materials, combined with options for organic dyes, open a spectrum of color possibilities. Further, the intrinsic patterns and textures found in these plant-

derived materials, like the intricate weaves of pineapple fibers or the subtle grain of mushroom leather, are accentuated and become design features in themselves.

Another significant aspect of the invention lies in its lifecycle approach. Recognizing the environmental pitfalls of traditional footwear disposal, the proposed method emphasizes creating products that are either recyclable or biodegradable. Thus, when a pair of shoes eventually reaches the end of its life, it doesn't contribute to the mounting non-biodegradable waste but returns to nature in an eco-friendly manner.

Simultaneously, the invention addresses the growing consumer demand for cruelty-free products. By completely eschewing animal-derived materials, it ensures that fashion-forward consumers can enjoy stylish, high-quality footwear without ethical concerns related to animal welfare.

The proposed invention's manufacturing process is equally noteworthy and groundbreaking. The conventional methods of producing leather footwear often involve numerous energy-intensive processes and chemicals that can be harmful to both workers and the environment. In contrast, this invention introduces a production methodology that is more streamlined and uses environmentally benign substances.

The transformation of raw plant materials into a leather-like substance is carried out using natural enzymes and organic catalysts, which not only maintain the integrity and natural appearance of the material but also significantly reduce the pollution associated with traditional

leather tanning. By leveraging these biological processes, the invention avoids the use of heavy metals and toxic chemicals, ensuring a cleaner, safer working environment for laborers and a reduced ecological footprint.

Furthermore, the invention's manufacturing process is modular and can be adapted to different scales. This means that it's equally suitable for small artisanal manufacturers as it is for large-scale industrial production. This adaptability ensures that the invention can be integrated into existing supply chains without massive overhauls, making it an attractive proposition for both established brands and emerging designers.

In terms of the final product's performance, the plant-based leather footwear exhibits qualities that are on par with, or even exceed, traditional leather in certain aspects. Rigorous testing has shown that the footwear demonstrates excellent resistance to wear and tear, maintaining its appearance and functionality over prolonged use. The material also offers a unique balance of softness and strength, providing comfort without compromising on support. Moreover, it possesses a natural resistance to fungal and bacterial growth, enhancing its longevity and hygienic properties.

The proposed invention's packaging and marketing strategies are also imbued with the ethos of sustainability and innovation. From using recycled or biodegradable packaging to transparently communicating the product's ecological credentials, every aspect is designed to resonate with the environmentally conscious consumer. Its marketing channels will be carefully chosen to

reflect its core values, focusing on platforms that promote sustainable living and ethical consumption.

Finally, this invention's social impact cannot be overstated. By providing an alternative to animal-derived leather, it presents an opportunity to reduce the strain on livestock farming, which is often associated with deforestation, greenhouse gas emissions, and other environmental issues. It also opens up new avenues for farmers to monetize agricultural byproducts and waste, potentially transforming them into profitable commodities.

In conclusion, the proposed invention is a comprehensive solution that not only caters to the modern consumer's demand for stylish, comfortable footwear but also answers the urgent call for more sustainable manufacturing practices in the fashion industry. Its innovative utilization of plant-based materials, coupled with an eco-friendly production process, sets a new standard for responsible consumption. With its forward-thinking design, commitment to quality, and alignment with global sustainability goals, this invention is poised to make a lasting impact on both the fashion world and the planet.

We Claim:

1. A method for producing plant-based leather footwear, comprising the steps of extracting fibers from a predetermined selection of plants, processing said fibers using natural enzymes and organic catalysts, and forming the processed fibers into a leather-like material suitable for the manufacturing of footwear.

2. The method of Claim 1, wherein the plant fibers are selected from a group comprising hemp, flax, sisal, coconut, and combinations thereof.

3. The method of Claim 1, wherein the natural enzymes are derived from a specific range of fungi or bacteria, selected for their ability to break down the plant fibers into a suitable texture and strength for leather-like material creation.

4. A plant-based leather footwear product, produced by the method of any of Claims 1 to 3, having properties including but not limited to wear resistance, fungal resistance, bacterial resistance, softness, strength, and natural appearance, substantially similar to or exceeding those of traditional leather.

5. The footwear product of Claim 4, wherein the material is treated with a natural, eco-friendly finish to enhance water resistance, color fastness, or other desired properties.

6. A system for the production of plant-based leather footwear, comprising a modular production line that includes mechanisms for fiber extraction, enzymatic processing,

material formation, cutting, shaping, and assembly, adaptable to both small and large-scale manufacturing.

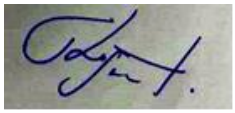
7. The system of Claim 6, wherein all wastewater and byproducts are managed through a closed-loop recycling system, minimizing waste and environmental impact.

8. A packaging method for plant-based leather footwear, comprising the utilization of recycled or biodegradable materials, designed to minimize waste and align with the product's sustainable ethos.

9. A marketing strategy for the plant-based leather footwear, implemented across platforms that align with sustainable living and ethical consumption, including but not limited to digital, print, and in-person advertising and promotion.

10. A method for recycling the plant-based leather footwear at the end of its lifecycle, wherein the footwear is collected, disassembled, and processed to reclaim fibers and other materials, suitable for the manufacturing of new footwear or other products.

Dated this 16th day of August 2023

Signature: 

Applicant(s)

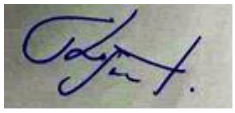
Mr. T. Loganathanet. al.

ABSTRACT

Design and Development of Sustainable Sports shoes using natural Plant based alternative

The proposed invention relates to the field of sustainable footwear, specifically focusing on the development, manufacturing, and marketing of plant-based leather footwear. Utilizing a unique blend of plant fibers such as hemp, flax, sisal, and coconut, the invention encompasses a method of treating these fibers with natural enzymes and organic catalysts to form a leather-like material. The material exhibits qualities such as wear resistance, fungal resistance, softness, and strength that are comparable to or exceed traditional leather. The invention also includes a modular production line with a closed-loop recycling system, eco-friendly packaging, a targeted marketing strategy, and a recycling method for end-of-life products. The overall concept emphasizes sustainability, quality, and ethical consumption, making it a groundbreaking solution in the field of environmentally responsible footwear.

Dated this 16th day of August 2023

Signature: 

Applicant(s)

Mr. T. Loganathanet. al.

FORM- 5
THE PATENTS ACT, 1970
(39 of 1970)
&
The Patents Rules, 2003
DECLARATION AS TO INVENTORSHIP
[See Section 10(6) and Rule 13(6)]

1. NAME OF THE APPLICANT(S)

I/We Mr. T. Loganathan et. al., all are citizen of India, Address of one of the Applicant: Faculty- Manufacturing Excellent in the Department of SFDP, FDDI, An Institute of National Importance, Ministry of Commerce & Industry, GOI, Hyderabad, Telangana, India, Pincode:500008.

hereby declare that the true and first inventor(s) of the invention disclosed in the complete specification filed in pursuance of ~~my~~ / our application numbered _____ dated 16-08-2023 ~~is~~/are

2. INVENTOR(S)

(a) NAME	**(b) NATIONALITY**	**(c) ADDRESS**
1. Mr. T. Loganathan	Indian	Faculty- Manufacturing Excellent in the Department of SFDP, FDDI, An Institute of National Importance, Ministry of Commerce & Industry, GOI, Hyderabad, Telangana, India, Pincode:500008
2. Dr. R. Ramakrishnan	Indian	Professor & Head, Department of Sports Technology, Tamilnadu Physical Education and Sports University, Chennai, Tamilnadu, India, Pincode: 600127
3. Dr. Muralidhar B A	Indian	Assistant Professor (Sl. Gr.), Department of Textile Technology, ACTECH-University Department of Anna University, Chennai, Tamilnadu, India, Pincode: 600025
4. Dr. G. Nallavan	Indian	Associate Professor, Department of Sports Technology,

		Tamilnadu Physical Education and Sports University, Chennai, Tamilnadu, India, Pincode: 600127
5. Mr. Akshayaraman M	Indian	Scientist, Honorary Faculty - Anna University, Design & Fashion Studio, CSIR-Central Leather Research Institute, Adyar, Chennai, Tamilnadu, India, Pincode:600020

~~3. DECLARATION TO BE GIVEN WHEN THE APPLICATION IN INDIA IS FILED BY THE APPLICANT(S) IN THE CONVENTION COUNTRY: -~~

N.A.

~~We the applicant(s) in the convention country hereby declare that our right to apply for a patent in India is by way of assignment from the true and first inventor(s).~~

Dated this 16th day of August 2023

Mr. T. Loganathan et. al.

Applicant(s)

To,
The Controller of Patents
The Patent Office, Chennai

Applicant(s) Name: Mr. T. Loganathanet et. al.

Total No. of sheet **2**
Sheet No.**1** of **2**

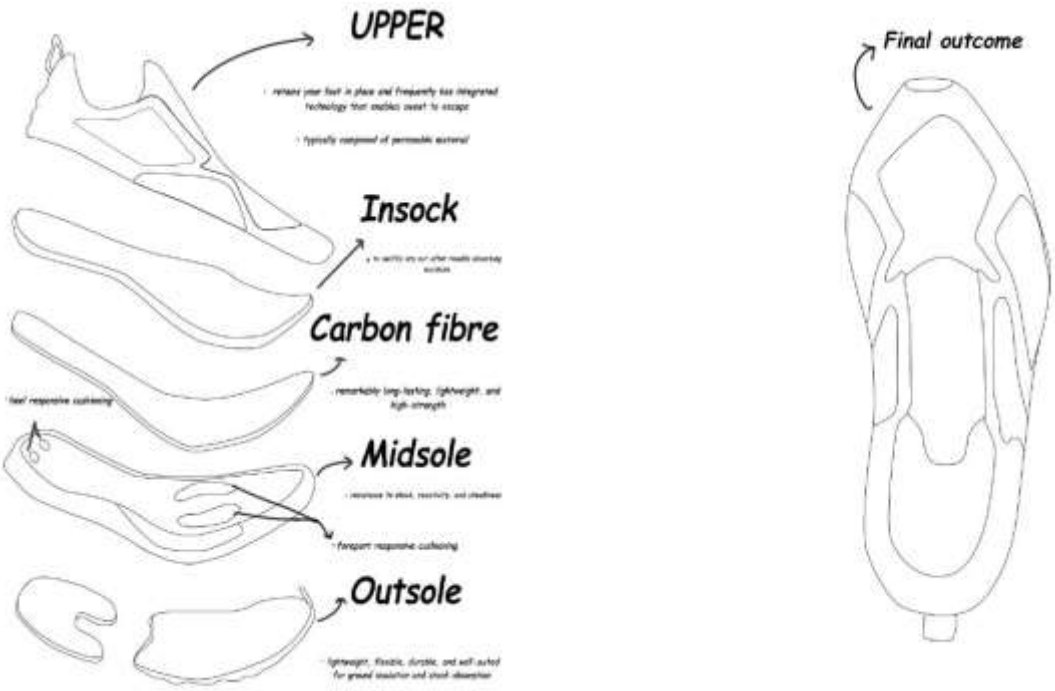
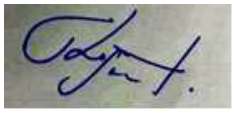


Figure 1: Pictorial representation of sports shoe Related to the proposed invention

Signature: 

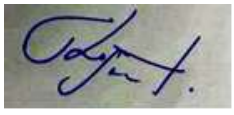
Applicant(s) Name: Mr. T. Loganathanet et. al.

Applicant(s) Name: Mr. T. Loganathanet et. al.

Total No. of sheet **2**
Sheet No.**2** of **2**

Figure 2: Final outcome representation of model of proposed invention Prototype

Dated this 16th day of August 2023

Signature: 

Applicant(s) Name: Mr. T. Loganathanet et. al.

FORM 1 THE PATENTS ACT 1970 (39 of 1970) and THE PATENTS RULES, 2003 **APPLICATION FOR GRANT OF PATENT** (See section 7, 54 and 135 and sub-rule (1) of rule 20)	(FOR OFFICE USE ONLY)

	Application No.	
	Filing date:	
	Amount of Fee paid:	
	CBR No:	
	Signature:	

1. APPLICANT'S REFERENCE / IDENTIFICATION NO. (AS ALLOTTED BY OFFICE)	

2. TYPE OF APPLICATION [Please tick (✓) at the appropriate category]

Ordinary (✓)		Convention ( )		PCT-NP ( )	
Divisional ( )	Patent of Addition ( )	Divisional ( )	Patent of Addition ( )	Divisional ( )	Patent of Addition ( )

3A. APPLICANT(S)

Name in Full	Nationality	Country of Residence	Address of the Applicant
1. Mr. T. Loganathan	Indian	India	Faculty- Manufacturing Excellent in the Department of SFDP, FDDI, An Institute of National Importance, Ministry of Commerce & Industry, GOI, Hyderabad, Telangana, India, Pincode:500008
2. Dr. R. Ramakrishnan	Indian	India	Professor & Head, Department of Sports Technology, Tamilnadu Physical Education and Sports University, Chennai, Tamilnadu, India, Pincode: 600127
3. Dr. Muralidhar B A	Indian	India	Assistant Professor (Sl. Gr.), Department of Textile Technology, ACTECH-University Department of Anna University, Chennai, Tamilnadu, India, Pincode: 600025
4. Dr. G. Nallavan	Indian	India	Associate Professor, Department of Sports Technology,

			Tamilnadu Physical Education and Sports University, Chennai, Tamilnadu, India, Pincode: 600127
5. Mr. Akshayaraman M	Indian	India	Scientist, Honorary Faculty - Anna University, Design & Fashion Studio, CSIR-Central Leather Research Institute, Adyar, Chennai, Tamilnadu, India, Pincode:600020

3B. CATEGORY OF APPLICANT [Please tick (✓) at the appropriate category]			
Natural Person (✓)	Other than Natural Person		
	Small Entity ( )	Startup ()	Others ()

4. INVENTOR(S) [Please tick (✓) at the appropriate category]		
Are all the inventor(s) same as the applicant(s) named above?	Yes (✓)	No ()

If "No", furnish the details of the inventor(s)

Name in Full	Nationality	Country of Residence	Address of the Inventor
Same as Applicant			

5. TITLE OF THE INVENTION

"Design and Development of Sustainable Sports shoes using natural Plant based alternative"

6. AUTHORISED REGISTERED PATENT AGENT(S)	IN/PA No.	
	Name	
	Mobile No.	
7. ADDRESS FOR SERVICE OF APPLICANT IN INDIA	Name	Mr. T. Loganathan
	Postal Address	Faculty- Manufacturing Excellent in the Department of SFDP, FDDI, An Institute of National Importance, Ministry of Commerce & Industry, GOI, Hyderabad, Telangana, India, Pincode:500008
	Telephone No.	
	Mobile No.	8919552865
	Fax No.	
	E-mail ID	03mrmanoj@gmail.com

~~8. IN CASE OF APPLICATION CLAIMING PRIORITY OF APPLICATION FILED IN CONVENTION COUNTRY, PARTICULARS OF CONVENTION APPLICATION~~

~~Country~~	~~Application Number~~	~~Filing date~~	~~Name of the applicant~~	~~Title of the invention~~	~~IPC (as classified in the convention country)~~

~~9. IN CASE OF PCT NATIONAL PHASE APPLICATION, PARTICULARS OF INTERNATIONAL APPLICATION FILED UNDER PATENT CO-OPERATION TREATY (PCT)~~

~~International application number~~	~~International filing date~~

~~10. IN CASE OF DIVISIONAL APPLICATION FILED UNDER SECTION 16, PARTICULARS OF ORIGINAL (FIRST) APPLICATION~~

~~Original (first) application No.~~	~~Date of filing of original (first) application~~

~~11. IN CASE OF PATENT OF ADDITION FILED UNDER SECTION 54, PARTICULARS OF MAIN APPLICATION OR PATENT~~

~~Main application/patent No.~~	~~Date of filing of main application~~

12. DECLARATIONS

(i) Declaration by the inventor(s)

(**In case the applicant is an assignee**: the inventor(s) may sign herein below or the applicant may upload the assignment or enclose the assignment with this application for patent or send the assignment by post/electronic transmission duly authenticated within the prescribed period).

I/We, the above named inventor(s) is/are the true & first inventor(s) for this Invention and declare that the applicant(s) herein is/are my/our assignee or legal representative.

(a) Date 16/08/2023

(b) Name	(c) Signature
1. Mr. T. Loganathan 2. Dr. R. Ramakrishnan 3. Dr. Muralidhar B A 4. Dr. G. Nallavan 5. Mr. Akshayaraman M	

~~(ii) Declaration by the applicant(s) in the convention country~~

~~(In case the applicant in India is different than the applicant in the convention country:~~ ~~the applicant in the convention country may sign herein below or applicant in India may upload the assignment from the applicant in the convention country or~~

enclose the said assignment with this application for patent or send the assignment by post/electronic transmission duly authenticated within the prescribed period)

I/We, the applicant(s) in the convention country declare that the applicant(s) herein is/are my/our assignee or legal representative.

(a) Date

(b) Signature(s)

(c) Name(s) of the signatory

(iii) Declaration by the applicant(s)

I/We the applicant(s) hereby declare(s) that: -

- I am/ We are in possession of the above-mentioned invention.
- The provisional/complete specification relating to the invention is filed with this application.
- The invention as disclosed in the specification uses the biological material from India and the necessary permission from the competent authority shall be submitted by me/us before the grant of patent to me/us.
- There is no lawful ground of objection(s) to the grant of the Patent to me/us.
- I am/we are the true & first inventor(s).
- I am/we are the assignee or legal representative of true & first inventor(s).
- The application or each of the applications, particulars of which are given in Paragraph-8, was the first application in convention country/countries in respect of my/our invention(s).
- I/We claim the priority from the above mentioned application(s) filed in convention country/countries and state that no application for protection in respect of the invention had been made in a convention country before that date by me/us or by any person from which I/We derive the title.
- My/our application in India is based on international application under Patent Cooperation Treaty (PCT) as mentioned in Paragraph-9.
- The application is divided out of my /our application particulars of which is given inParagraph-10 and pray that this application may be treated as deemed to have been filed on DD/MM/YYYY under section 16 of the Act.
- The said invention is an improvement in or modification of the invention particulars of which are given in Paragraph-11.

13. FOLLOWING ARE THE ATTACHMENTS WITH THE APPLICATION

(a) Form 2

Item	Details	Fee	Remarks
Complete/ Provisional specification) #	No. of pages: 19		
No. of Claim(s)	No. of claims: 10		

	No. of pages: 02		
Abstract	No. of pages: 01		
No. of Drawing(s)	No. of drawings: 02 No. of pages: 02		

In case of a complete specification, if the applicant desires to adopt the drawings filed with his provisional specification as the drawings or part of the drawings for the complete specification under rule 13(4), the number of such pages filed with the provisional specification are
required to be mentioned here.

(b) Complete specification (in conformation with the international application)/as amended before the International Preliminary Examination Authority (IPEA), as applicable (2 copies).

(c) Sequence listing in electronic form

(d) Drawings (in conformation with the international application)/as amended before the International Preliminary Examination Authority (IPEA), as applicable (2 copies).

(e) Priority document(s) or a request to retrieve the priority document(s) from DAS (Digital Access Service) if the applicant had already requested the office of first filing to make the priority document(s) available to DAS.

(f) Translation of priority document/Specification/International Search Report/International Preliminary Report on Patentability.

(g) Statement and Undertaking on Form 3

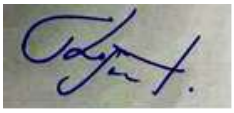
(h) Declaration of Inventorship on Form 5

(i)Power of Authority

(j)**Total fee ₹…….in Cash/ Banker's Cheque /Bank Draft bearing No..... Date on ……. Bank.**

I/We hereby declare that to the best of my/our knowledge, information and belief the fact and matters slated herein are correct and I/We request that a patent may be granted to me/us for the said invention.

Dated this 16th day of August 2023

Signature: 

Name: Mr. T. Loganathanet. al.

To,

The Controller of Patents
The Patent Office, at Chennai

Note: -

* Repeat boxes in case of more than one entry.

* To be signed by the applicant(s) or by authorized registered patent agent otherwise where mentioned.
* Tick ()/cross (x) whichever is applicable/not applicable in declaration in paragraph-12.
* Name of the inventor and applicant should be given in full, family name in the beginning.
* Strike out the portion which is/are not applicable.
* For fee: See First Schedule";

FORM 9

THE PATENT ACT, 1970
(39 of 1970)
&
THE PATENTS RULES, 2003

REQUEST FOR PUBLICATION

[See section 11A (2) rule 24A]

I/We **Mr. T. Loganathan,Dr. R. Ramakrishnan,Dr. Muralidhar B A,Dr. G. Nallavan,Mr. Akshayaraman M** hereby request for early publication of my/our [Patent Application No.] TEMP/E-1/64076/2023-CHE

Dated **16/08/2023 00:00:00** under section 11A(2) of the Act.

Dated this(Final Payment Date):----------
Signature
Name of the signatory

To,
The Controller of Patents,
The Patent Office,
At Chennai

This form is electronically generated.

FORM 9

THE PATENT ACT, 1970
(39 of 1970)
&
THE PATENTS RULES, 2003

REQUEST FOR PUBLICATION

[See section 11A (2) rule 24A]

I/We **Mr. T. Loganathan,Dr. R. Ramakrishnan,Dr. Muralidhar B A,Dr. G. Nallavan,Mr. Akshayaraman M** hereby request for early publication of my/our [Patent Application No.] TEMP/E-1/64076/2023-CHE

Dated **16/08/2023 00:00:00** under section 11A(2) of the Act.

Dated this(Final Payment Date):----------
Signature
Name of the signatory

To,
The Controller of Patents,
The Patent Office,
At Chennai

This form is electronically generated.

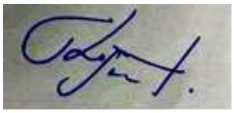
FORM 3

THE PATENTS ACT,
1970 (39 of 1970)
and
THE PATENTS RULES, 2003
STATEMENT AND UNDERTAKING UNDER SECTION 8
(See section 8; Rule 12)

1. Name of the applicant(s).	I/We Mr. T. Loganathan et. al., all are citizen of India, Address of one of the Applicant: Faculty- Manufacturing Excellent in the Department of SFDP, FDDI, An Institute of National Importance, Ministry of Commerce & Industry, GOI, Hyderabad, Telangana, India, Pincode:500008.
2. Name, address and nationality of the joint applicant.	(i) that I/We have not made any application for the same/substantially the same invention outside India Or (ii) ~~that I/We who have made this application No… dated alone/jointly with ..... , made for the same/ substantially same invention, application(s) for patent in the other countries, the particulars of which are given below:~~

Name of the Country	Date of Application	Application No.	Status of the Application	Date of Publication	Date of grant
-	-	-	-	-	-

3. Name and address of the assignee	(iii) that the rights in the application(s) has/have been assigned to …… none …… …… …… that I/We undertake that upto the date of grant of the patent by the Controller, I/We would keep him informed in writing the details regarding corresponding applications for patents filed outside India within six months from the date of filing of such application. **Dated this 16th day of August 2023**

4. To be signed by the applicant or his authorized registered patent agent.	**Signature:** 
5. Name of the natural person who has signed.	Mr. T. Loganathanet. al. **Name of the Applicant(s)**
	To The Controller of Patents, The Patent Office, at Chennai
Note.- Strike out whichever is not applicable;	

Office of the Controller General of Patents, Designs & Trade Marks
Department for Promotion of Industry and Internal Trade
Ministry of Commerce & Industry,
Government of India

(http://ipindia.nic.in/index.htm)

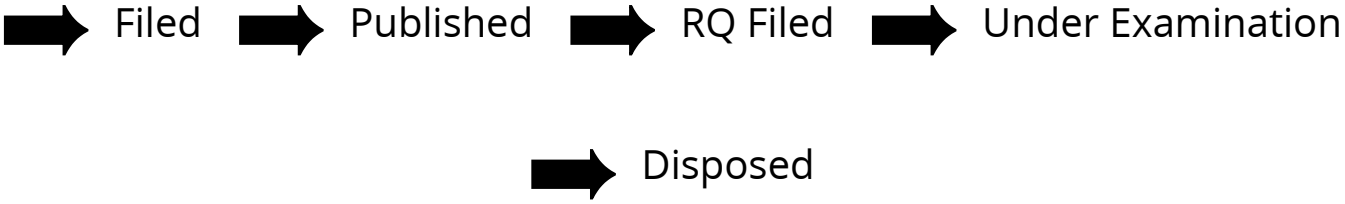
(http://ipindia.nic.in/index.htm)

Application Details	
APPLICATION NUMBER	202321012900
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	25/02/2023
APPLICANT NAME	1 . Prof. Vasanthi Kadhiravan 2 . Mrs. P. Yoga Lakshmi 3 . Dr. S.Saroja 4 . Dr. P. Kumaravelu 5 . Karuppasamy Govindasamy 6 . MouPramanik 7 . Ms. Dilpreet kaur 8 . Dr Hemantajit Gogoi 9 . Dr Poli Borah 10 . Dr. KoullaParpa 11 . Prof. Abderraouf Ben Abderrahman 12 . Ajay kumar
TITLE OF INVENTION	“AI BASED YOGA MAT WITH ATTACHABLE MARKERS”
FIELD OF INVENTION	COMPUTER SCIENCE
E-MAIL (As Per Record)	contact@elpisanalytix.com
ADDITIONAL-EMAIL (As Per Record)	elpisanalytix17@gmail.com
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	20/03/2023
PUBLICATION DATE (U/S 11A)	17/03/2023
REPLY TO FER DATE	25/07/2024

Application Status

APPLICATION STATUS	**Reply Filed. Application in amended examination**

View Documents



In case of any discrepancy in status, kindly contact ipo-helpdesk@nic.in

CLAIMS

I/We Claim:

1. An AI based yoga mat (100) with attachable markers, comprising:

Characterized in that;

i) a flat mat (100) having ~~a plurality of~~ perimeter edges and an upper surface (101) upon which a person may practice yoga;

ii) a body position marking locations in a grid-like pattern on the upper surface (101) of the mat (100);

iii) a set of pressure sensing sensors (103) configured to sense weight distribution and position of the user's body placed on the upper surface of the mat;

iv) an AI based processor (104) configured to assist a user in performing yoga by gathering information from the sensors and other exercises with real time data of weight distribution and position of the user's body as it applies pressure to the yoga mat (100); and

v) a feedback module integrated with said processor (104) to process~~ed~~ and compare~~d~~ the data for each yoga pose, and to provide feedback to the user to correct or confirm proper weight ~~15~~ distribution and position.

vi) the system customizes yoga routines based on the user's skill level, goals, and progress, dynamically adjusting the difficulty.

2. The AI based yoga mat with attachable markers as claimed in claim 1, wherein the markers have a color that is different from and contrasts with the color of the mat.

3. The AI based yoga mat with attachable markers as claimed in claim 1, wherein the markers operatively associated with certain of the body position marking locations, such that an individual using the mat can obtain enhanced results during physical activity by associating the markers with the marking locations for maintaining proper alignment, correct form, positioning and

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posture during yoga or exercise.

~~4. The AI based yoga mat with attachable markers as claimed in claim 1, wherein the processor operatively connected to the yoga mat that reads and processes data relating to weight distribution and position of the user.~~

4~~5~~. The AI based yoga mat with attachable markers as claimed in claim 1, wherein the upper surface of the mat is made of a different material than the rest of the body and has a sufficient strength and thickness to securely retain the markers to the holes.

5. The AI based yoga mat with attachable markers as claimed in claim 1, wherein the mat integrates a network of sensors to monitor weight distribution, balance, and movement patterns, providing a comprehensive analysis of the user's yoga practice.

6. The AI based yoga mat with attachable markers as claimed in claim 1, wherein the system customizes yoga routines based on the user's skill level, goals, and progress, dynamically adjusting the difficulty and types of poses.

7. The AI based yoga mat with attachable markers as claimed in claim 1, wherein the system tracks and records performance metrics over time, providing users with detailed analytics and progress reports where, users receive insights into their improvement areas, with the AI suggesting targeted exercises to enhance specific aspects of their practice.

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Dated this 22nd day of February, 2023

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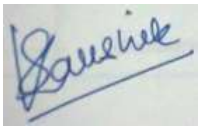


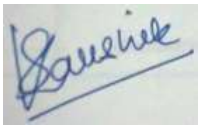
Somya Kaushik
AGENT FOR THE APPLICANT
IN/PA/5019

ABSTRACT

"AI BASED YOGA MAT WITH ATTACHABLE MARKERS"

The invention relates to the field of a yoga mats, and more specifically to an exercise mat with electrical hardware, sensors, and a wired or wireless software application configured to optimize exercise mechanics and training routines, e.g., a yoga practice. The AI based yoga mat with attachable markers includes a flat mat having a plurality of perimeter edges and an upper surface upon which a person may practice yoga, a body position marking locations in a grid-like pattern on the upper surface of the mat, a set of pressure sensing sensors configured to sense weight distribution and position of the user's body, an AI based processor configured to assist a user in performing yoga and other exercises with real time data of weight distribution and position of the user's body as it applies pressure to the yoga mat, and a feedback module to processed and compared the data for each yoga pose, and to provide feedback to the user to correct or confirm proper weight distribution and position.

Dated this 22nd day of February, 2023



Somya Kaushik
AGENT FOR THE APPLICANT
IN/PA/5019

CLAIMS

I/We Claim:

1. An AI based yoga mat (100) with attachable markers, comprising:

   Characterized in that;

   i) a flat mat (100) having perimeter edges and an upper surface (101) upon which a person may practice yoga;

   ii) a body position marking locations in a grid-like pattern on the upper surface (101) of the mat (100);

   iii) a set of pressure sensing sensors (103) configured to sense weight distribution and position of the user's body placed on the upper surface of the mat;

   iv) an AI based processor (104) configured to assist a user in performing yoga by gathering information from the sensors and other exercises with real time data of weight distribution and position of the user's body as it applies pressure to the yoga mat (100); and

   v) a feedback module integrated with said processor (104) to process and compare the data for each yoga pose, and to provide feedback to the user to correct or confirm proper weight distribution and position.

   vi) the system customizes yoga routines based on the user’s skill level, goals, and progress, dynamically adjusting the difficulty.

2. The AI based yoga mat with attachable markers as claimed in claim 1, wherein the markers have a color that is different from and contrasts with the color of the mat.

3. The AI based yoga mat with attachable markers as claimed in claim 1, wherein the markers operatively associated with certain of the body position marking locations, such that an individual using the mat can obtain enhanced results during physical activity by associating the markers with the marking locations for maintaining proper alignment, correct form, positioning and posture during yoga or exercise.

4. The AI based yoga mat with attachable markers as claimed in claim 1, wherein the upper surface of the mat is made of a different material than the rest of the body and has a sufficient strength and thickness to securely retain the markers to the holes.

5. The AI based yoga mat with attachable markers as claimed in claim 1, wherein the mat integrates a network of sensors to monitor weight distribution, balance, and movement patterns, providing a comprehensive analysis of the user's yoga practice.

6. The AI based yoga mat with attachable markers as claimed in claim 1, wherein the system customizes yoga routines based on the user's skill level, goals, and progress, dynamically adjusting the difficulty and types of poses.

7. The AI based yoga mat with attachable markers as claimed in claim 1, wherein the system tracks and records performance metrics over time, providing users with detailed analytics and progress reports where, users receive insights into their improvement areas, with the AI suggesting targeted exercises to enhance specific aspects of their practice.

Dated this 22nd day of February, 2023

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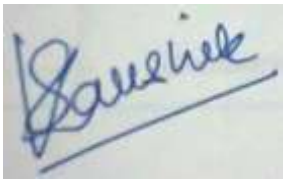


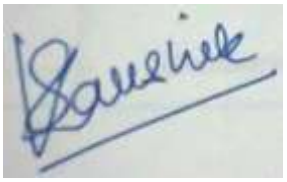
Somya Kaushik
AGENT FOR THE APPLICANT
IN/PA/5019

ABSTRACT

“AI BASED YOGA MAT WITH ATTACHABLE MARKERS”

The invention relates to the field of a yoga mats, and more specifically to an exercise mat with electrical hardware, sensors, and a wired or wireless software application configured to optimize exercise mechanics and training routines, e.g., a yoga practice. The AI based yoga mat with attachable markers includes a flat mat having a plurality of perimeter edges and an upper surface upon which a person may practice yoga, a body position marking locations in a grid-like pattern on the upper surface of the mat, a set of pressure sensing sensors configured to sense weight distribution and position of the user's body, an AI based processor configured to assist a user in performing yoga and other exercises with real time data of weight distribution and position of the user's body as it applies pressure to the yoga mat, and a feedback module to processed and compared the data for each yoga pose, and to provide feedback to the user to correct or confirm proper weight distribution and position.

Dated this 22nd day of February, 2023



Somya Kaushik
AGENT FOR THE APPLICANT
IN/PA/5019

FORM 2

THE PATENTS ACT, 1970
(39 of 1970)

&

THE PATENTS RULES, 2003

COMPLETE SPECIFICATION
(See Section 10; rule 13)

Title of the Invention

"AI BASED YOGA MAT WITH ATTACHABLE MARKERS"

APPLICANTS:

Name : Prof. Vasanthi Kadhiravan; Mrs. P. Yoga Lakshmi; Dr. S.Saroja; Dr. P.Kumaravelu; Karuppasamy Govindasamy; MouPramanik; Ms. Dilpreet kaur; Dr Hemantajit Gogoi; Dr Poli Borah; Dr. KoullaParpa; Prof. Abderraouf Ben Abderrahman; Ajay kumar

Nationality : Indian

Address : Professor & Head , Department of Physical Education, University of Mumbai, Kalina Campus, Santacruz (East), Mumbai – 400098; Assistant Professor (Sr.G) Department of Computer Science, College of Science and Humanities, SRM Institute of Science and Technology, Katankulathur 603203; Associate Professor cum Coordinator, Centre for Yoga Education, Alagappa University, Karaikudi- 630003; Department of Physical Education, Tamil nadu Physical Education and Sports University, Mellakottaiyur, Chennai-600127; Doctoral Research Fellow, Department of Physical Education and Sports Sciences, College of Science and Humanities, SRM Institute of Science and Technology, Kattankulathur, Tamil nadu, India; Ph.D Research Scholar,

Department of Yoga, College of Science and Humanities, SRM Institute of Science and Technology, Kattankulathur, Tamilnadu, India- 603203; Assistant Professor &Director Physical Education , suryadatta Group of Institutes , Pune, India; Village: TengaAamMajGaon, PO: Ghilamara, Dist: Lakhimpur, PIN: 787053, Assam; Village: TengaAamMajGaon, PO: Ghilamara, Dist: Lakhimpur, PIN: 787053, Assam; Faculty of Sports and Exercise Science, UCLan University of Cyprus, Pyla 7080, Cyprus; Higher Institute of Sport and Physical Education of Ksar-Said, University of Manouba, Tunisia; Faculty sports physiotherapy, Ambala, Haryana, India.

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The following specification particularly describes the invention and the manner in which it is performed.

TECHNICAL FIELD

[0001] The invention relates to the field of a yoga mats, and more specifically to an exercise mat with electrical hardware, sensors, and a wired or wireless software application configured to optimize exercise mechanics and training routines, e.g., a yoga practice.

BACKGROUND ART

[0002] Background description includes information that may be useful in understanding the present invention. It is not an admission that any of the information provided herein is prior art or relevant to the presently claimed invention, or that any publication specifically or implicitly referenced is prior art.

[0003] Staying physically active and exercising is an essential part of life, as maintaining an active life-style not only replenishes a person's state of mind by releasing chronic tension and increasing self-awareness, but also ensures, that chronic diseases and various other aliments are effectively kept in check. It is clear, that as the incidence of debilitating medical conditions such as but not limited to heart diseases and cancer diminish due to an improved public awareness regarding maintaining a healthy life-style and regular physical activity, there is still an unmet need for exercise mats from the perspective of actively exercising individuals, that greatly aide in the improvement of their physical form and maintenance of correct posture during the physical work-out session.

[0004] Yoga and exercise mats have been accessible in a plethora of distinct shapes, colors, designs and materials heretofore. Exercise and yoga mat designs with printed indicia and grids are available in order to assist visually impaired exercisers in maintaining a proper body posture and alignment and to assess incremental improvements in flexibility.

[0005] A standard yoga mat typically comprises a sheet of foamed or solid elastomeric material (e.g., polyvinyl chloride (PVC)) having a plurality of layers of different material are used. For example, yoga mats sold for use in hot yoga or Bikram yoga may have an absorbent upper layer (e.g., terry cloth material)

permanently affixed to an elastomeric mat lower layer such that the elastomeric lower layer will contact the underlying floor while the yoga practitioner sits/stands on the towel-like upper layer. The towel like upper layer may then absorb perspiration. One commercially available example is the Breath TM Yoga Mat marketed by Breath Yoga Mats or Vancouver, British Columbia which has a cotton terry top layer, a middle layer of absorbent cushioning fibers and a coated, brushed bottom layer for gripping the underlying floor surface. However, the multi-layer yoga mats of the prior art have typically not been designed to permit periodic detachment and laundering of the upper perspiration-absorbing layer.

[0006] Therefore, there a need for an exercise mat with electrical hardware, sensors, and a wired or wireless software application configured to optimize exercise mechanics and training routines, e.g., a yoga practice. Therefore, the present disclosure overcomes the above-mentioned problem associated with the traditionally available method or system, any of the above-mentioned inventions can be used with the presented disclosed technique with or without modification.

[0007] All publications herein are incorporated by reference to the same extent as if each individual publication or patent application were specifically and individually indicated to be incorporated by reference. Where a definition or use of a term in an incorporated reference is inconsistent or contrary to the definition of that term provided herein, the definition of that term provided herein applies and the definition of that term in the reference does not apply.

OBJECTS OF THE INVENTION

[0008] The principal object of the present invention is to overcome the disadvantages of the prior art.

[0009] Another object of the present invention is to provide an AI based yoga mat with attachable markers.

[0010] Another object of the present invention is to provide an exercise mat with electrical hardware, sensors, and a wired or wireless software application

configured to optimize exercise mechanics and training routines, e.g., a yoga practice.

[0011] Another object of the present invention is to provide an elegant, reliable and precise approach towards the AI based yoga mat with attachable markers.

[0012] Yet another object of the present invention is to provide a process of improving functionalities of the AI based yoga mat with attachable markers.

SUMMARY

[0013] The invention relates to the field of a yoga mats, and more specifically to an exercise mat with electrical hardware, sensors, and a wired or wireless software application configured to optimize exercise mechanics and training routines, e.g., a yoga practice.

[0014] The AI based yoga mat with attachable markers includes a flat mat having a plurality of perimeter edges and an upper surface upon which a person may practice yoga, a body position marking locations in a grid-like pattern on the upper surface of the mat, a set of pressure sensing sensors configured to sense weight distribution and position of the user's body, an AI based processor configured to assist a user in performing yoga and other exercises with real time data of weight distribution and position of the user's body as it applies pressure to the yoga mat, and a feedback module to processed and compared the data for each yoga pose, and to provide feedback to the user to correct or confirm proper weight distribution and position.

[0015] According to an aspect, the markers have a color that is different from and contrasts with the color of the mat.

[0016] According to an aspect, the markers operatively associated with certain of the body position marking locations, such that an individual using the mat can obtain enhanced results during physical activity by associating the

markers with the marking locations for maintaining proper alignment, correct form, positioning and posture during yoga or exercise.

[0017] According to an aspect, the processor operatively connected to the yoga mat that reads and processes data relating to weight distribution and position of the user.

[0018] According to an aspect, the upper surface of the mat is made of a different material than the rest of the body and has a sufficient strength and thickness to securely retain the markers to the holes.

[0019] These and other features will become apparent from the following detailed description of illustrative embodiments thereof, which is to be read in connection with the accompanying drawings. While the invention has been described and shown with reference to the preferred embodiment, it will be apparent that variations might be possible that would fall within the scope of the present invention.

BRIEF DESCRIPTION OF DRAWINGS

[0020] So that the manner in which the above-recited features of the present invention can be understood in detail, a more particular description of the invention, briefly summarized above, may have been referred by embodiments, some of which are illustrated in the appended drawings. It is to be noted, however, that the appended drawings illustrate only typical embodiments of this invention and are therefore not to be considered limiting of its scope, for the invention may admit to other equally effective embodiments.

[0021] These and other features, benefits, and advantages of the present invention will become apparent by reference to the following text figure, with like reference numbers referring to like structures across the views, wherein: Figures attached: N.A.

DETAILED DESCRIPTION OF THE INVENTION

[0022] While the present invention is described herein by way of example using embodiments and illustrative drawings, those skilled in the art will recognize that the invention is not limited to the embodiments of drawing or drawings described and are not intended to represent the scale of the various components. Further, some components that may form a part of the invention may not be illustrated in certain figures, for ease of illustration, and such omissions do not limit the embodiments outlined in any way. It should be understood that the drawings and the detailed description thereto are not intended to limit the invention to the particular form disclosed, but on the contrary, the invention is to cover all modifications, equivalents, and alternatives falling within the scope of the present invention as defined by the appended claim.

[0023] As used throughout this description, the word "may" is used in a permissive sense (i.e. meaning having the potential to), rather than the mandatory sense, (i.e. meaning must). Further, the words "a" or "an" mean "at least one" and the word "plurality" means "one or more" unless otherwise mentioned. Furthermore, the terminology and phraseology used herein are solely used for descriptive purposes and should not be construed as limiting in scope. Language such as "including," "comprising," "having," "containing," or "involving," and variations thereof, is intended to be broad and encompass the subject matter listed thereafter, equivalents, and additional subject matter not recited, and is not intended to exclude other additives, components, integers, or steps. Likewise, the term "comprising" is considered synonymous with the terms "including" or "containing" for applicable legal purposes. Any discussion of documents acts, materials, devices, articles, and the like are included in the specification solely for the purpose of providing a context for the present invention. It is not suggested or represented that any or all these matters form part of the prior art base or were common general knowledge in the field relevant to the present invention.

[0024] In this disclosure, whenever a composition or an element or a group of elements is preceded with the transitional phrase "comprising", it is understood

that we also contemplate the same composition, element, or group of elements with transitional phrases “consisting of”, “consisting”, “selected from the group of consisting of, “including”, or “is” preceding the recitation of the composition, element or group of elements and vice versa.

[0025] The present invention is described hereinafter by various embodiments with reference to the accompanying drawing, wherein reference numerals used in the accompanying drawing correspond to the like elements throughout the description. This invention may, however, be embodied in many different forms and should not be construed as limited to the embodiment set forth herein. Rather, the embodiment is provided so that this disclosure will be thorough and complete and will fully convey the scope of the invention to those skilled in the art. In the following detailed description, numeric values and ranges are provided for various aspects of the implementations described. These values and ranges are to be treated as examples only and are not intended to limit the scope of the claims. In addition, several materials are identified as suitable for various facets of the implementations.

[0026] The invention relates to the field of a yoga mats, and more specifically to an exercise mat with electrical hardware, sensors, and a wired or wireless software application configured to optimize exercise mechanics and training routines, e.g., a yoga practice.

[0027] The AI based yoga mat with attachable markers includes a flat mat having a plurality of perimeter edges and an upper surface upon which a person may practice yoga, a body position marking locations in a grid-like pattern on the upper surface of the mat, a set of pressure sensing sensors configured to sense weight distribution and position of the user's body, an AI based processor configured to assist a user in performing yoga and other exercises with real time data of weight distribution and position of the user's body as it applies pressure to the yoga mat, and a feedback module to processed and compared the data for each yoga pose, and to provide feedback to the user to correct or confirm proper weight

distribution and position.

[0028] According to an aspect, the markers have a color that is different from and contrasts with the color of the mat.

[0029] According to an aspect, the markers operatively associated with certain of the body position marking locations, such that an individual using the mat can obtain enhanced results during physical activity by associating the markers with the marking locations for maintaining proper alignment, correct form, positioning and posture during yoga or exercise.

[0030] According to an aspect, the processor operatively connected to the yoga mat that reads and processes data relating to weight distribution and position of the user.

[0031] According to an aspect, the upper surface of the mat is made of a different material than the rest of the body and has a sufficient strength and thickness to securely retain the markers to the holes.

[0032] Interactive exercise mat apparatuses, systems, and methods of use are shown and described in one embodiment, an exercise mat may include electrical hardware, sensors, and a wired or wireless software application configured to optimize exercise mechanics and training routines, e.g., a yoga practice. The mat may be a pressure sensing yoga mat that may communicate via Bluetooth or other wired or wireless compatible communication protocol to a smart phone, tablet, computer, or other device. The mat may assist a user in performing yoga and other exercises with real time data of weight distribution and position of the user's body as it applies pressure to the yoga mat. This data may be processed and compared to an ideal position for each yoga pose, and feedback may be provided to the user to correct or confirm proper weight distribution and position. A processor may be operatively connected to the yoga mat that reads and processes data relating to weight distribution and position of the user.

[0033] In accordance with various aspects of the subject specification, an example embodiment may employ classifiers that are explicitly trained (e.g., via a generic training data) as well as implicitly trained (e.g., via observing user behavior, user preferences, historical information, receiving extrinsic information). For example, support vector machines may be configured via learning or training phase within a classifier constructor and feature selection module. Thus, the classifier(s) may be used to automatically learn and perform a number of functions, including but not limited to determining exercise routines, user identities, target goals for dietary or fitness needs, and the likes. This learning may be on an individual basis, i.e., based solely on a single user, or may apply across a set of or the entirety of the user base. Information from the users may be aggregated and the classifier(s) may be used to automatically learn and perform a number of functions based on this aggregated information. The information may be dynamically distributed, such as through an automatic update, a notification, or any other method or means, to the entire user base, a subset thereof or to an individual user.

[0034] Additionally, the mats may be coupled with one or more of warning devices, light emitting diodes (LEDs), memory devices, associated speakers, sound and speech synthesizers, audio/video feedback, realignment sensors, heart rate monitors, pulse monitors, gyroscopic sensors, or voice guidance to correct postures based on body measurements including height and weight, weight distribution, heart rate, length and timing of posture held, position of the user's upper body which may not be in contact with the mat, and timing of breath. Furthermore, provisions can be made for reading of directional movement including spiral movements of energy lines (meridians) through the body; lifting and alignment of bones and skeletal structure, musculature, the pelvis, shoulders, spine, vertebrae, vertebral column, and biofeedback and instruction can be provided based thereon. The systems may further provide measurement of vital signs and brain frequency to give biofeedback on meditative state, including responsive light or audio guidance or voice guidance for breath control, programs

for breath control techniques to change brain/meditative frequencies, and deep relaxation and de-stress techniques, programs and control systems.

[0035] The timing and biofeedback systems may, for example, instruct the user on how long to hold a pose while also correlating the length held with the rhythm and timing of the breath. Breathing is a fundamental and important guideline to physical movement, bodily awareness, and mind-body control. Biofeedback systems may also provide feedback on biorhythms and functions of the body such as heart rate. The biofeedback systems may also assist with mental focus while training. Machine generation of original flow sequencing and programming can also be based upon the user's level of physical capability, performance, and increases/improvements in skill, flexibility, agility, strength, overall health, and brain function.

[0036] The mat of the present invention of the preferred embodiment has attachable and detachable markers that are produced and manufactured in a plurality of forms, shapes, styles and colors. Instead of the plug and hole configuration described previously, other forms of attachment, such as Velcro, a reusable adhesive, buttons or snaps, or any type of temporary or subsequently removable securement can be used to temporarily secure the markers to the mat. In some embodiments, the areas of attachment can be magnetized and the markers magnetically adhered to the magnetized locations as desired.

[0037] While the foregoing describes various embodiments of the invention, other and further embodiments of the invention may be devised without departing from the basic scope thereof. The scope of the invention is determined by the claims that follow. The invention is not limited to the described embodiments, versions or examples, which are included to enable a person having ordinary skill in the art to make and use the invention when combined with information and knowledge available to the person having ordinary skill in the art.

[0038] Thus, the scope of the present disclosure is defined by the appended claims and includes both combinations and sub-combinations of the various

features described hereinabove as well as variations and modifications thereof, which would occur to persons skilled in the art upon reading the foregoing description.

~~CLAIMS~~

~~I/We Claim:~~

~~1. An AI based yoga mat with attachable markers comprising:~~

~~a flat mat having a plurality of perimeter edges and an upper surface upon which a person may practice yoga;~~

~~a body position marking locations in a grid-like pattern on the upper surface of the mat;~~

~~a set of pressure sensing sensors configured to sense weight distribution and position of the user's body;~~

~~an AI based processor configured to assist a user in performing yoga and other exercises with real time data of weight distribution and position of the user's body as it applies pressure to the yoga mat; and~~

~~a feedback module to processed and compared the data for each yoga pose, and to provide feedback to the user to correct or confirm proper weight distribution and position.~~

~~2. The AI based yoga mat with attachable markers as claimed in claim 1, wherein the markers have a color that is different from and contrasts with the color of the mat.~~

~~3. The AI based yoga mat with attachable markers as claimed in claim 1, wherein the markers operatively associated with certain of the body position marking locations, such that an individual using the mat can obtain enhanced results during physical activity by associating the markers with the marking locations for maintaining proper alignment, correct form, positioning and posture during yoga or exercise.~~

~~4. The AI based yoga mat with attachable markers as claimed in claim 1, wherein the processor operatively connected to the yoga mat that reads and processes data relating to weight distribution and position of the user.~~

5. The AI based yoga mat with attachable markers as claimed in claim 1, wherein the upper surface of the mat is made of a different material than the rest of the body and has a sufficient strength and thickness to securely retain the markers to the holes.

Dated this 22nd day of February, 2023

Somya Kaushik
AGENT FOR THE APPLICANT
IN/PA/5019

ABSTRACT

"AI BASED YOGA MAT WITH ATTACHABLE MARKERS"

The invention relates to the field of a yoga mats, and more specifically to an exercise mat with electrical hardware, sensors, and a wired or wireless software application configured to optimize exercise mechanics and training routines, e.g., a yoga practice. The AI based yoga mat with attachable markers includes a flat mat having a plurality of perimeter edges and an upper surface upon which a person may practice yoga, a body position marking locations in a grid like pattern on the upper surface of the mat, a set of pressure sensing sensors configured to sense weight distribution and position of the user's body, an AI based processor configured to assist a user in performing yoga and other exercises with real time data of weight distribution and position of the user's body as it applies pressure to the yoga mat, and a feedback module to processed and compared the data for each yoga pose, and to provide feedback to the user to correct or confirm proper weight distribution and position.

Dated this 22nd day of February, 2023

Somya Kaushik
AGENT FOR THE APPLICANT
IN/PA/5019

FORM 2

THE PATENTS ACT, 1970

(39 of 1970)

&

THE PATENTS RULES, 2003

COMPLETE SPECIFICATION

(See Section 10; rule 13)

Title of the Invention

"AI BASED YOGA MAT WITH ATTACHABLE MARKERS"

APPLICANTS:

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Department of Yoga, College of Science and Humanities, SRM Institute of Science and Technology, Kattankulathur, Tamilnadu, India- 603203; Assistant Professor &Director Physical Education , suryadatta Group of Institutes , Pune, India; Village: TengaAamMajGaon, PO: Ghilamara, Dist: Lakhimpur, PIN: 787053, Assam; Village: TengaAamMajGaon, PO: Ghilamara, Dist: Lakhimpur, PIN: 787053, Assam; Faculty of Sports and Exercise Science, UCLan University of Cyprus, Pyla 7080, Cyprus; Higher Institute of Sport and Physical Education of Ksar-Said, University of Manouba, Tunisia; Faculty sports physiotherapy, Ambala, Haryana, India.

The following specification particularly describes the invention and the manner in which it is performed.

TECHNICAL FIELD

[0001] The invention relates to the field of a yoga mats, and more specifically to an exercise mat with electrical hardware, sensors, and a wired or wireless software application configured to optimize exercise mechanics and training routines, e.g., a yoga practice.

BACKGROUND ART

[0002] Background description includes information that may be useful in understanding the present invention. It is not an admission that any of the information provided herein is prior art or relevant to the presently claimed invention, or that any publication specifically or implicitly referenced is prior art.

[0003] Staying physically active and exercising is an essential part of life, as maintaining an active life-style not only replenishes a person's state of mind by releasing chronic tension and increasing self-awareness, but also ensures, that chronic diseases and various other aliments are effectively kept in check. It is clear, that as the incidence of debilitating medical conditions such as but not limited to heart diseases and cancer diminish due to an improved public awareness regarding maintaining a healthy life-style and regular physical activity, there is still an unmet need for exercise mats from the perspective of actively exercising individuals, that greatly aide in the improvement of their physical form and maintenance of correct posture during the physical work-out session.

[0004] Yoga and exercise mats have been accessible in a plethora of distinct shapes, colors, designs and materials heretofore. Exercise and yoga mat designs with printed indicia and grids are available in order to assist visually impaired exercisers in maintaining a proper body posture and alignment and to assess incremental improvements in flexibility.

[0005] A standard yoga mat typically comprises a sheet of foamed or solid elastomeric material (e.g., polyvinyl chloride (PVC)) having a plurality of layers of different material are used. For example, yoga mats sold for use in hot yoga or Bikram yoga may have an absorbent upper layer (e.g., terry cloth material)

permanently affixed to an elastomeric mat lower layer such that the elastomeric lower layer will contact the underlying floor while the yoga practitioner sits/stands on the towel-like upper layer. The towel like upper layer may then absorb perspiration. One commercially available example is the Breath TM Yoga Mat marketed by Breath Yoga Mats or Vancouver, British Columbia which has a cotton terry top layer, a middle layer of absorbent cushioning fibers and a coated, brushed bottom layer for gripping the underlying floor surface. However, the multi-layer yoga mats of the prior art have typically not been designed to permit periodic detachment and laundering of the upper perspiration-absorbing layer.

[0006] Therefore, there a need for an exercise mat with electrical hardware, sensors, and a wired or wireless software application configured to optimize exercise mechanics and training routines, e.g., a yoga practice. Therefore, the present disclosure overcomes the above-mentioned problem associated with the traditionally available method or system, any of the above-mentioned inventions can be used with the presented disclosed technique with or without modification.

[0007] All publications herein are incorporated by reference to the same extent as if each individual publication or patent application were specifically and individually indicated to be incorporated by reference. Where a definition or use of a term in an incorporated reference is inconsistent or contrary to the definition of that term provided herein, the definition of that term provided herein applies and the definition of that term in the reference does not apply.

OBJECTS OF THE INVENTION

[0008] The principal object of the present invention is to overcome the disadvantages of the prior art.

[0009] Another object of the present invention is to provide an AI based yoga mat with attachable markers.

[0010] Another object of the present invention is to provide an exercise mat with electrical hardware, sensors, and a wired or wireless software application

configured to optimize exercise mechanics and training routines, e.g., a yoga practice.

[0011] Another object of the present invention is to provide an elegant, reliable and precise approach towards the AI based yoga mat with attachable markers.

[0012] Yet another object of the present invention is to provide a process of improving functionalities of the AI based yoga mat with attachable markers.

SUMMARY

[0013] The invention relates to the field of a yoga mats, and more specifically to an exercise mat with electrical hardware, sensors, and a wired or wireless software application configured to optimize exercise mechanics and training routines, e.g., a yoga practice.

[0014] The AI based yoga mat with attachable markers includes a flat mat having a plurality of perimeter edges and an upper surface upon which a person may practice yoga, a body position marking locations in a grid-like pattern on the upper surface of the mat, a set of pressure sensing sensors configured to sense weight distribution and position of the user's body, an AI based processor configured to assist a user in performing yoga and other exercises with real time data of weight distribution and position of the user's body as it applies pressure to the yoga mat, and a feedback module to processed and compared the data for each yoga pose, and to provide feedback to the user to correct or confirm proper weight distribution and position.

[0015] According to an aspect, the markers have a color that is different from and contrasts with the color of the mat.

[0016] According to an aspect, the markers operatively associated with certain of the body position marking locations, such that an individual using the mat can obtain enhanced results during physical activity by associating the

markers with the marking locations for maintaining proper alignment, correct form, positioning and posture during yoga or exercise.

[0017] According to an aspect, the processor operatively connected to the yoga mat that reads and processes data relating to weight distribution and position of the user.

[0018] According to an aspect, the upper surface of the mat is made of a different material than the rest of the body and has a sufficient strength and thickness to securely retain the markers to the holes.

[0019] These and other features will become apparent from the following detailed description of illustrative embodiments thereof, which is to be read in connection with the accompanying drawings. While the invention has been described and shown with reference to the preferred embodiment, it will be apparent that variations might be possible that would fall within the scope of the present invention.

BRIEF DESCRIPTION OF DRAWINGS

[0020] So that the manner in which the above-recited features of the present invention can be understood in detail, a more particular description of the invention, briefly summarized above, may have been referred by embodiments, some of which are illustrated in the appended drawings. It is to be noted, however, that the appended drawings illustrate only typical embodiments of this invention and are therefore not to be considered limiting of its scope, for the invention may admit to other equally effective embodiments.

[0021] These and other features, benefits, and advantages of the present invention will become apparent by reference to the following text figure, with like reference numbers referring to like structures across the views, wherein: Figures attached: N.A.

DETAILED DESCRIPTION OF THE INVENTION

[0022] While the present invention is described herein by way of example using embodiments and illustrative drawings, those skilled in the art will recognize that the invention is not limited to the embodiments of drawing or drawings described and are not intended to represent the scale of the various components. Further, some components that may form a part of the invention may not be illustrated in certain figures, for ease of illustration, and such omissions do not limit the embodiments outlined in any way. It should be understood that the drawings and the detailed description thereto are not intended to limit the invention to the particular form disclosed, but on the contrary, the invention is to cover all modifications, equivalents, and alternatives falling within the scope of the present invention as defined by the appended claim.

[0023] As used throughout this description, the word "may" is used in a permissive sense (i.e. meaning having the potential to), rather than the mandatory sense, (i.e. meaning must). Further, the words "a" or "an" mean "at least one" and the word "plurality" means "one or more" unless otherwise mentioned. Furthermore, the terminology and phraseology used herein are solely used for descriptive purposes and should not be construed as limiting in scope. Language such as "including," "comprising," "having," "containing," or "involving," and variations thereof, is intended to be broad and encompass the subject matter listed thereafter, equivalents, and additional subject matter not recited, and is not intended to exclude other additives, components, integers, or steps. Likewise, the term "comprising" is considered synonymous with the terms "including" or "containing" for applicable legal purposes. Any discussion of documents acts, materials, devices, articles, and the like are included in the specification solely for the purpose of providing a context for the present invention. It is not suggested or represented that any or all these matters form part of the prior art base or were common general knowledge in the field relevant to the present invention.

[0024] In this disclosure, whenever a composition or an element or a group of elements is preceded with the transitional phrase "comprising", it is understood

that we also contemplate the same composition, element, or group of elements with transitional phrases “consisting of”, “consisting”, “selected from the group of consisting of, “including”, or “is” preceding the recitation of the composition, element or group of elements and vice versa.

[0025] The present invention is described hereinafter by various embodiments with reference to the accompanying drawing, wherein reference numerals used in the accompanying drawing correspond to the like elements throughout the description. This invention may, however, be embodied in many different forms and should not be construed as limited to the embodiment set forth herein. Rather, the embodiment is provided so that this disclosure will be thorough and complete and will fully convey the scope of the invention to those skilled in the art. In the following detailed description, numeric values and ranges are provided for various aspects of the implementations described. These values and ranges are to be treated as examples only and are not intended to limit the scope of the claims. In addition, several materials are identified as suitable for various facets of the implementations.

[0026] The invention relates to the field of a yoga mats, and more specifically to an exercise mat with electrical hardware, sensors, and a wired or wireless software application configured to optimize exercise mechanics and training routines, e.g., a yoga practice.

[0027] The AI based yoga mat with attachable markers includes a flat mat having a plurality of perimeter edges and an upper surface upon which a person may practice yoga, a body position marking locations in a grid-like pattern on the upper surface of the mat, a set of pressure sensing sensors configured to sense weight distribution and position of the user's body, an AI based processor configured to assist a user in performing yoga and other exercises with real time data of weight distribution and position of the user's body as it applies pressure to the yoga mat, and a feedback module to processed and compared the data for each yoga pose, and to provide feedback to the user to correct or confirm proper weight

distribution and position.

[0028] According to an aspect, the markers have a color that is different from and contrasts with the color of the mat.

[0029] According to an aspect, the markers operatively associated with certain of the body position marking locations, such that an individual using the mat can obtain enhanced results during physical activity by associating the markers with the marking locations for maintaining proper alignment, correct form, positioning and posture during yoga or exercise.

[0030] According to an aspect, the processor operatively connected to the yoga mat that reads and processes data relating to weight distribution and position of the user.

[0031] According to an aspect, the upper surface of the mat is made of a different material than the rest of the body and has a sufficient strength and thickness to securely retain the markers to the holes.

[0032] Interactive exercise mat apparatuses, systems, and methods of use are shown and described in one embodiment, an exercise mat may include electrical hardware, sensors, and a wired or wireless software application configured to optimize exercise mechanics and training routines, e.g., a yoga practice. The mat may be a pressure sensing yoga mat that may communicate via Bluetooth or other wired or wireless compatible communication protocol to a smart phone, tablet, computer, or other device. The mat may assist a user in performing yoga and other exercises with real time data of weight distribution and position of the user's body as it applies pressure to the yoga mat. This data may be processed and compared to an ideal position for each yoga pose, and feedback may be provided to the user to correct or confirm proper weight distribution and position. A processor may be operatively connected to the yoga mat that reads and processes data relating to weight distribution and position of the user.

[0033] In accordance with various aspects of the subject specification, an example embodiment may employ classifiers that are explicitly trained (e.g., via a generic training data) as well as implicitly trained (e.g., via observing user behavior, user preferences, historical information, receiving extrinsic information). For example, support vector machines may be configured via learning or training phase within a classifier constructor and feature selection module. Thus, the classifier(s) may be used to automatically learn and perform a number of functions, including but not limited to determining exercise routines, user identities, target goals for dietary or fitness needs, and the likes. This learning may be on an individual basis, i.e., based solely on a single user, or may apply across a set of or the entirety of the user base. Information from the users may be aggregated and the classifier(s) may be used to automatically learn and perform a number of functions based on this aggregated information. The information may be dynamically distributed, such as through an automatic update, a notification, or any other method or means, to the entire user base, a subset thereof or to an individual user.

[0034] Additionally, the mats may be coupled with one or more of warning devices, light emitting diodes (LEDs), memory devices, associated speakers, sound and speech synthesizers, audio/video feedback, realignment sensors, heart rate monitors, pulse monitors, gyroscopic sensors, or voice guidance to correct postures based on body measurements including height and weight, weight distribution, heart rate, length and timing of posture held, position of the user's upper body which may not be in contact with the mat, and timing of breath. Furthermore, provisions can be made for reading of directional movement including spiral movements of energy lines (meridians) through the body; lifting and alignment of bones and skeletal structure, musculature, the pelvis, shoulders, spine, vertebrae, vertebral column, and biofeedback and instruction can be provided based thereon. The systems may further provide measurement of vital signs and brain frequency to give biofeedback on meditative state, including responsive light or audio guidance or voice guidance for breath control, programs

for breath control techniques to change brain/meditative frequencies, and deep relaxation and de-stress techniques, programs and control systems.

[0035] The timing and biofeedback systems may, for example, instruct the user on how long to hold a pose while also correlating the length held with the rhythm and timing of the breath. Breathing is a fundamental and important guideline to physical movement, bodily awareness, and mind-body control. Biofeedback systems may also provide feedback on biorhythms and functions of the body such as heart rate. The biofeedback systems may also assist with mental focus while training. Machine generation of original flow sequencing and programming can also be based upon the user's level of physical capability, performance, and increases/improvements in skill, flexibility, agility, strength, overall health, and brain function.

[0036] The mat of the present invention of the preferred embodiment has attachable and detachable markers that are produced and manufactured in a plurality of forms, shapes, styles and colors. Instead of the plug and hole configuration described previously, other forms of attachment, such as Velcro, a reusable adhesive, buttons or snaps, or any type of temporary or subsequently removable securement can be used to temporarily secure the markers to the mat. In some embodiments, the areas of attachment can be magnetized and the markers magnetically adhered to the magnetized locations as desired.

[0037] While the foregoing describes various embodiments of the invention, other and further embodiments of the invention may be devised without departing from the basic scope thereof. The scope of the invention is determined by the claims that follow. The invention is not limited to the described embodiments, versions or examples, which are included to enable a person having ordinary skill in the art to make and use the invention when combined with information and knowledge available to the person having ordinary skill in the art.

[0038] Thus, the scope of the present disclosure is defined by the appended claims and includes both combinations and sub-combinations of the various

features described hereinabove as well as variations and modifications thereof, which would occur to persons skilled in the art upon reading the foregoing description.

REPLY TO THE FIRST EXAMINATION REPORT

Due date for submission: July 25, 2024

via e-filing

The Controller of Patents,
Boudhik Sampada Bhawan
Plot No. 32, Sector – 14, Dwarka
New Delhi – 110078

July 25, 2024

Kind Attention: Shubham Upadhyay, Controller of Patents
Re: Indian Patent Application No. 202321012900 dated 25/02/2023
Title: "AI BASED YOGA MAT WITH ATTACHABLE MARKERS"
Applicant(s): 1. Prof. Vasanthi Kadhiravan; 2. Mrs. P. Yoga Lakshmi; 3. Dr. S.Saroja; 4. Dr. P.Kumaravelu; 5. Karuppasamy Govindasamy, 6. MouPramanik, 7. Ms. Dilpreet kaur, 8. Dr Hemantajit Gogoi, 9. Dr Poli Borah, 10. Dr. KoullaParpa, 11. Prof. Abderraouf Ben Abderrahman, 12. Ajay kumar

Dear Sir,

We are in receipt of the First Examination Report dated 25/01/2024 issued by the Patent Office in the captioned patent application. The due date to put the Patent Application in order for grant is July 25, 2024. The Learned (Ld.) Controller is requested to take the above on record.

Summary of Amendments

It is submitted by the applicant that the original claims 1-5 of the present application have been amended and the amended claims 1-7 falls within the scope of the instant application. It is further stated that no new subject matter has been added while performing the said amendments of the claims. It is prayed that the

amended claims be taken on record and the same be considered as part of the present application.

Cancellation of subject-matter is without prejudice to its subsequent reinstatement or filing of divisional applications incorporating the same.

The Applicant believes with the amendments made in the claims, the present Application conforms with the requirements of the Patents Act, 1970 (hereinafter referred to as “the Act”).

The Applicant respectfully requests the Ld. Controller to take the above amendments on record.

The replies to the objections raised by the Controller are as follows:

OBJECTION 1- INVENTIVE STEP

The subject matter as disclosed in claims 1-5 of the instant application does not constitute an invention under section 2(1)(ja) of the Patents Act, 1970 (as amended) as it lacks inventive step in view of teachings from the cited document(s) D1-D2 along with common general knowledge in the art. The instant alleged invention discloses an exercise mat with electrical hardware, sensors, and a wired or wireless software application configured to optimize exercise mechanics and training routines, e.g., a yoga practice. Cited prior art document D1: US20150328495A1 (Soba) discloses a yoga and exercise mat comprising a body having a longitudinal length, a width and a top surface; body position marking locations provided on the top surface of the mat; and markers operatively associated with certain of the body position marking locations, such that an individual using the mat can obtain enhanced results during physical activity by associating the markers with the marking locations for maintaining proper alignment, correct form, positioning and posture during yoga or exercise. Regarding subject matter of independent claim 1, I. An AI based yoga mat with attachable markers comprising: II. a flat mat having a plurality of perimeter edges and an upper surface upon which a person may practice yoga; III. a body position marking

locations in a grid-like pattern on the upper surface of the mat; IV. a set of pressure sensing sensors configured to sense weight distribution and position of the user's body; V. an AI based processor configured to assist a user in performing yoga and other exercises with real time data of weight distribution and position of the user's body as it applies pressure to the yoga mat; and VI. a feedback module to processed and compared the data for each yoga pose, and to provide feedback to the user to correct or confirm proper weight distribution and position. (refer D1: whole document, especially, abstract, paragraphs [0053] - [0103]; figures 1 - 5) Cited prior art document D1 fails to sense weight distribution.

Although, claim 1 is not inventive in view of cited document(s) D2 combined with teachings of cited prior art document D1. Cited prior art document D2: US11452916B1 (Kahn - DP Technologies Inc) discloses a yoga under-mat to be positioned under an exercise mat, to make the exercise mat a smart mat. The yoga under-mat including a plurality of sensors to monitor a user's health data, while the user is performing exercises, and to provide data to the user. Kindly refer D2: whole document, especially, abstract, columns 2 - 10; figures 1 - 6. Special attention is drawn to D2: column 3, line 34: "Exercise state logic 220 utilizes the data from the biosensors 212 to determine the user's body position and weight distribution." Further, claims 2-5 do not appear to contain any additional technical features as compared to claim 1, which in combination with the features of any claim to which they refer, meet the requirements of section 2(1)(ja) of the Patents Act, 1970 (as amended) over the teachings of cited document(s) D1-D2, mutatis-mutandis, being obvious to a person skilled in the art. Hence, claims 1-5 lack inventive step and they do not meet the requirement of section 2(1)(ja) of The Patents Act, 1970 (as amended) since the features encompassed by the said claims are directly derivable from the cited prior art document(s) D1-D2. Hence, combined with common general knowledge in the art, the instant application constitutes a subject matter which makes the alleged invention a matter of routine experiment for a person skilled in the art.

OUR RESPONSE

Characterization of D1 (US20150328495A1)

A novel yoga and exercise mat is provided, which has a plurality of attachable markers that can be securely affixed to the mat. Particularly the plurality of attachable markers are provided in an array of different shapes, styles and colors, wherein the colors easily contrast with the color of the mat, which further serves a major function of aiding those individuals who are visually impaired. The plurality of markers may also be personalized, whereby the exercising individual can print his/her own messages as a way of motivation with the ultimate end-goal of achieving enhanced exercise results by being able to establish proper alignment, correct form and posture on the mat during the performance of yoga, exercise, or any other physical activity, while at the same time greatly minimizing the risk of acquiring an injury.(Abstract)

D1 discloses that the present invention now provides a yoga and exercise mat, wherein the body of the mat comprises a longitudinal length in full communication with a width perpendicular to the longitudinal length, and a top surface, wherein the top surface includes body position marking locations comprising an alignment guide, a plurality of grid-like patterns and marker holes equally and symmetrically distanced in relation to one another, whereby the plurality of marker holes conveniently allow the attachment of a plurality of marker types.

The present invention discloses an AI based yoga mat with attachable markers includes a flat mat having a plurality of perimeter edges and an upper surface upon which a person may practice yoga, a body position marking locations in a grid-like pattern on the upper surface of the mat, **a set of pressure sensing sensors configured to sense weight distribution and position of the user's body, an AI based processor configured to assist a user in performing yoga and other exercises with real time data of weight distribution and position of the user's body as it applies pressure to the yoga mat, and a feedback module to processed and compared the data for each yoga pose, and to provide**

feedback to the user to correct or confirm proper weight distribution and position.

D1 on the contrary does not disclose any of the highlighted features, thus providing inventiveness over the cited reference D1.

Characterization of D2 (US11452916B1)

A yoga under-mat to be positioned under an exercise mat, to make the exercise mat a smart mat. The yoga under-mat including a plurality of sensors to monitor a user's health data, while the user is performing exercises, and to provide data to the user. (Abstract)

D2 discloses a **universal thin layer may be placed under any exercise mat or other exercise surface.** The under-mat is designed to be light weight, and to be easily rolled up within an exercise mat. Use of the under-mat turns any exercise mat into a smart mat. This enables users to utilize whatever mat they prefer, and also enables a gym or similar location to provide under-mats to users, regardless of what kind of exercise mat they own. By utilizing an under-mat which is not directly in contact with the user's body, and sweat, the under-mat can be simplified and does not need to be able to be washed down. In one embodiment, the under-mat may have different sensing geometries, depending on the type(s) of exercise which may be done on the mat. This under-mat will be referred to as a yoga under mat in the present application, but one of skill in the art would understand that the under-mat may be used for any exercise, stretching, meditation, or other contexts.

The present invention on the contrary provides an AI based yoga mat with attachable markers includes a flat mat having a plurality of perimeter edges and an upper surface upon which a person may practice yoga, a body position marking locations in a grid-like pattern on the upper surface of the mat, **a set of pressure sensing sensors configured to sense weight distribution and position of the user's body, an AI based processor configured to assist a user in performing yoga and other exercises with real time data of weight distribution and position of the user's body as it applies pressure to the yoga mat, and a**

feedback module to processed and compared the data for each yoga pose, and to provide feedback to the user to correct or confirm proper weight distribution and position.

The yoga under-mat which has to be positioned under an exercise mat is completely different from the disclosed invention.

Hence the present invention is novel and inventive over D1 and D2. Therefore, the waiver of the objections are therefore requested.

OBJECTION 2: CLARITY AND CONCISENESS

Claims 1-5 are system claims which relate to an AI based yoga mat with attachable markers but do not disclose any functional and structural limitations of the feature of the said claims but in turn represents computer program per se (readable instructions with the help of algorithm) in sequential manner and implemented on the hardware (conventional systems) and software environment with certain protocols (algorithms) without exhibiting any hardware orientation/dependence for collective and collaborative implementation with the executable instructions showing any technical enhancement and going beyond the "normal" physical interactions between the program (software) and the computer (hardware) on which it is run in form of a computer program. So, the said system claims represent a set of instructions executed on a general purpose and conventional computer / processor / computing platform without showing any technical enhancement as a whole, which attract provisions of computer program per-se and hence, prima-facie, fall within the purview of clause (k) of section (3) of the Patents Act, 1970 (as amended).

Our response

The applicant humbly submits that original claim 1 has been amended by including novel and inventive features of the proposed invention. Further, the

applicant intends to claim the inventive features broadly, thus the preamble is followed by the phrase – "comprising", which is further followed by inventive features of the present invention.

The reference numerals have been included in the Parentheses.

Marked up and amended copy of claims is enclosed with the response, hence requesting withdrawal of the above objection.

Hence, withdrawal of the said objection is prayed for.

OBJECTION 3 SUFFICIENCY OF DISCLOSURE

The abstract should be prepared as per the instructions given in rule 13(7) of the Patents Rules, 2016 (as amended). The abstract should contain a concise summary of the matter contained in the specification and the summary shall indicate the technical field to which the invention belongs to, technical advancement of the invention as compared to the existing knowledge and principal use of the invention excluding any speculative use.

OUR RESPONSE

In order to overcome the objection the Applicant submits revised abstract according to the rule 13(7) of patent rules.

OBJECTION 4 SCOPE:

1. The independent claim(s) do(es) not have any constructional/structural features, which makes the scope of the instant application unclear and it is not falling within the boundary of the scope for which the protection is sought. Hence said claims do not satisfy the definition of invention stated under section 10 (4) (c)of the Patents Act, 1970 (as amended). Hence the same cannot be allowed.

2. The principal claim(s) should be characterized and inventive features should be clearly brought out. Drafting of claims should be done in such a

manner that independent claim will highlight the all essential features of the invention while all other claims will depends on the main claim and explain the individual features to make the invention more clear, definitive and within the well-defined boundary and scope of the specification disclosed.

OUR RESPONSE

In order to overcome the objection the Applicant submits revised claims 1-7.

OBJECTION 5 CLARITY AND CONCISENESS

The expression(s) "at least", "plurality", "one or more", "including", "includes" are not allowed in claim(s) as they are not clear and definite.

OUR RESPONSE

In order to overcome the objection the applicant submits that the term “plurality” has been deleted from the claim.

OBJECTION 5 DEFINITIVENESS

1. Claims containing terms that are introduced in the claims for the first time should be recited using the indefinite articles "a" or "an".

2. The independent claims should be cast in the two-part form where appropriate, with those features known in combination from the prior art being placed in the preamble and the remaining features being included in the characterizing part.

3. Reference numerals shall be supplemented in claims to enhance the intelligibility of claims and comply with rule 13 (4) of the Patents Rules, 2003 (as amended).

OUR RESPONSE

In order to overcome the objection the Applicant submits revised claims with referral numerals.

OBJECTION 6 OTHERS REQUIREMENTS

If any amendment is necessitated in the complete specification then it is required to identify (submission of marked copy) the amendments carried out and to indicate the portion (page number and line number) of the complete specification as filed on which these amendments are based on. Further, the pages wherever amendments are carried out need to be freshly typed on white pages and to be filed in duplicate.

OUR RESPONSE

In order to overcome the objection the Applicant submits that no new subject matter has been added to the complete specification.

FORMAL REQUIREMENTS

1. Date and Signature of Applicant

All the forms, documents, and drawings shall be duly signed by the applicant or his authorized patent agent.

OUR RESPONSE

In order to overcome the objection the Applicant submits revised forms with the authorized signatures.

2. Statement & Under Taking (Form 3 Details)

Latest status of the foreign filing particulars of all applications made in foreign countries should be filed within the prescribed time period under sub-section (1) of section 8 of the Patents Act, 1970 (as amended). Details regarding application for Patents which may be filed outside India from time to time for the same or substantially the same invention should be furnished within six months from the date of filing of the said application under subsection (2) of section 8 and sub-rule (1) of rule 12 of the Patents Rules, 2003 (as amended).

OUR RESPONSE

In order to overcome the objection the Applicant submits that no foreign application has been filed and the applicant submits revised Form 3 for your reference.

3. Registered Agent as per Patent Agent Register

Registration number of the Patent agent shall be present in the request letters, various forms and power of authority submitted with this office.

The Applicant submits revised forms with proper format of the registration number.

4. Format of Specification (rule 13)

All documents and copies of the documents, except affidavits and drawings, filed with patent office, under clause (d) of sub-rule (1) of rule 9 of the Patents Rules, 2003 (as amended), shall contain the numbering to every fifth line of each page of the description and each page of the claims at right half of the left margin.

The preamble of the claims shall begin with the phrase: – "I/We claim" (Form-2, para-5).

The title of the invention shall be prepared in accordance with rule 13(7)(a) of the Patents Rules, 2003 (as amended).

Irrelevant portion should be deleted and blank spaces should be scored out in the complete specification.

Pages of complete specification should be numbered serially starting from Form 2 as page no.1.

Date and sign of applicant(s) / authorized agent shall be present at the end of claims as per Form 2 Para 6 of Patents Act, 1970 (as amended).

OUR RESPONSE

In order to overcome the objection the Applicant submits revised forms with proper signatures and dates.

Format of Drawings

The Drawings referred to in the specification should be prepared by the instructions contained in Rule 15 of the Patent Rules, 2003 (as amended).

In order to overcome the objection the Applicant submits revised drawings.

Other Deficiencies

Revised form 1 is required to be filed where in form 1, point 4, option (NO) is incorrectly ticked.

In order to overcome the objection the Applicant submits revised form 1.

The Controller is therefore requested to waive the objection.

As elaborated above, we have complied with the objections raised by the Learned Controller and thus, request him to allow the application to proceed to grant. The Controller is requested not to issue any adverse order before providing an opportunity to the applicant of being heard.

Yours faithfully,

Somya Kaushik
AGENT FOR THE APPLICANT
IN/PA/5019

Encl:

1. Marked-up and clean copies of claims.
2. Marked-up and clean copies of specification.

3. All revised forms

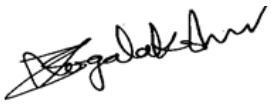
FORM –26
THE PATENTS ACT, 1970
(39 of 1970)
&
THE PATENTS RULES, 2003
Form for Authorization of a Patent Agent/ or Any Person in a Matter or Proceeding under the Act
(See sections 127 and 132; rule 135)

We, Prof. Vasanthi Kadhiravan, an Indian Citizen having registered address at **Professor & Head , Department of Physical Education, University of Mumbai, Kalina Campus, Santacruz (East), Mumbai – 400098;** Mrs. P. Yoga Lakshmi an Indian Citizen having registered address at **Assistant Professor (Sr.G) Department of Computer Science, College of Science and Humanities, SRM Institute of Science and Technology, Katankulathur 603203**; Dr. S.Saroja an Indian Citizen having registered address at **Associate Professor cum Coordinator, Centre for Yoga Education, Alagappa University, Karaikudi- 630003;** Dr. P.Kumaravelu an Indian Citizen having registered address at **Department of Physical Education, Tamilnadu Physical Education and Sports University, Mellakottaiyur, Chennai-600127;** Karuppasamy Govindasamy an Indian Citizen having registered address at **Doctoral Research Fellow, Department of Physical Education and Sports Sciences, College of Science and Humanities, SRM Institute of Science and Technology, Kattankulathur, Tamil nadu, India;** MouPramanik an Indian Citizen having registered address at **Ph.D Research Scholar, Department of Yoga, College of Science and Humanities, SRM Institute of Science and Technology, Kattankulathur, Tamilnadu, India- 603203;** Ms. Dilpreet kaur an Indian Citizen having registered address at **Assistant Professor &Director Physical Education , suryadatta Group of Institutes , Pune, India;** Dr Hemantajit Gogoi an Indian Citizen having registered address at **Village: TengaAamMajGaon, PO: Ghilamara, Dist: Lakhimpur, PIN: 787053, Assam;** Dr Poli Borah an Indian Citizen having registered address at **Village: TengaAamMajGaon, PO: Ghilamara, Dist: Lakhimpur, PIN: 787053, Assam;** Dr. KoullaParpa a Cyprus Citizen having registered address at **Faculty of Sports and Exercise Science, UCLan University of Cyprus, Pyla 7080, Cyprus**; Prof. Abderraouf Ben Abderrahman a Tunisia Citizen having registered address at **Higher Institute of Sport and Physical Education of Ksar-Said, University of Manouba, Tunisia;** Ajay kumar an Indian Citizen having registered address at **Faculty sports physiotherapy, Ambala, Haryana, India;**;hereby authorise **Ms. Ojeswini Bondalapati** Agent **(IN/PA/2969); Ms. Somya Kaushik (IN/PA/5019)** of **Elpis Analytix**, having their office address at **1004/E, Lohiya Gali No. 4, Babarpur, New Delhi,-110032** to act on our behalf in connection with filling of patent application for the invention under the above mentioned Act in respect of

invention entitled **"AI BASED YOGA MAT WITH ATTACHABLE MARKERS"** and request that all notices, requisitions and communication relating thereto may be sent to such persons at the above address unless otherwise specified.
We hereby revoke all previous authorizations, if any made, in respect of same matter or proceeding.
We hereby assent to the action already taken by the said persons in the above matters.

Dated this 24th day of July, 2024

1. Signature: 
Name: Prof. Vasanthi Kadhiravan

2. Signature: 
Name: Mrs. P. Yoga Lakshmi

3. Signature: 
Name: Dr. S.Saroja

4. Signature: 
Name: Dr. P.Kumaravelu

5. Signature: 
Name: Karuppasamy Govindasamy

6. Signature: 
Name: Mou Pramanik

7. Signature: 
Name: Ms. Dilpreet kaur

8. Signature: 
Name: Dr HemantajitGogoi

9. Signature: 
Name: Dr Poli Borah

10. Signature: 
Name: Dr. KoullaParpa

11. Signature: 

12. Signature: 

Name: Prof. Abderraouf Ben Abderrahman Name: Ajay kumar

:

Somya Kaushik
AGENT FOR THE APPLICANT
IN/PA/5019

To,
The Controller of Patents,
The Patent Office,
at Delhi

FORM –26
THE PATENTS ACT, 1970
(39 of 1970)
&
THE PATENTS RULES, 2003
Form for Authorization of a Patent Agent/ or Any Person in a Matter or Proceeding under the Act
(See sections 127 and 132; rule 135)

We, Prof. Vasanthi Kadhiravan, an Indian Citizen having registered address at **Professor & Head , Department of Physical Education, University of Mumbai, Kalina Campus, Santacruz (East), Mumbai – 400098;** Mrs. P. Yoga Lakshmi an Indian Citizen having registered address at **Assistant Professor (Sr.G) Department of Computer Science, College of Science and Humanities, SRM Institute of Science and Technology, Katankulathur 603203**; Dr. S.Saroja an Indian Citizen having registered address at **Associate Professor cum Coordinator, Centre for Yoga Education, Alagappa University, Karaikudi- 630003;** Dr. P.Kumaravelu an Indian Citizen having registered address at **Department of Physical Education, Tamilnadu Physical Education and Sports University, Mellakottaiyur, Chennai-600127;** Karuppasamy Govindasamy an Indian Citizen having registered address at **Doctoral Research Fellow, Department of Physical Education and Sports Sciences, College of Science and Humanities, SRM Institute of Science and Technology, Kattankulathur, Tamil nadu, India;** MouPramanik an Indian Citizen having registered address at **Ph.D Research Scholar, Department of Yoga, College of Science and Humanities, SRM Institute of Science and Technology, Kattankulathur, Tamilnadu, India- 603203;** Ms. Dilpreet kaur an Indian Citizen having registered address at **Assistant Professor &Director Physical Education , suryadatta Group of Institutes , Pune, India;** Dr Hemantajit Gogoi an Indian Citizen having registered address at **Village: TengaAamMajGaon, PO: Ghilamara, Dist: Lakhimpur, PIN: 787053, Assam;** Dr Poli Borah an Indian Citizen having registered address at **Village: TengaAamMajGaon, PO: Ghilamara, Dist: Lakhimpur, PIN: 787053, Assam;** Dr. KoullaParpa a Cyprus Citizen having registered address at **Faculty of Sports and Exercise Science, UCLan University of Cyprus, Pyla 7080, Cyprus**; Prof. Abderraouf Ben Abderrahman a Tunisia Citizen having registered address at **Higher Institute of Sport and Physical Education of Ksar-Said, University of Manouba, Tunisia;** Ajay kumar an Indian Citizen having registered address at **Faculty sports physiotherapy, Ambala, Haryana, India;**;hereby authorise **Ms. Ojeswini Bondalapati** Agent **(IN/PA/2969); Ms. Somya Kaushik (IN/PA/5019)** of **Elpis Analytix**, having their office address at **1004/E, Lohiya Gali No. 4, Babarpur, New Delhi,-110032** to act on our behalf in connection with filling of patent application for the invention under the above mentioned Act in respect of

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We hereby revoke all previous authorizations, if any made, in respect of same matter or proceeding.
We hereby assent to the action already taken by the said persons in the above matters.

Dated this 242thnd day of JulyFebruary, 20243

1. Signature:
Name: Prof. Vasanthi Kadhiravan

2. Signature:
Name: Mrs. P. Yoga Lakshmi

3. Signature:
Name: Dr. S.Saroja

4. Signature:
Name: Dr. P.Kumaravelu

5. Signature:
Name: Karuppasamy Govindasamy

6. Signature:
Name: Mou Pramanik

7. Signature:
Name: Ms. Dilpreet kaur

8. Signature:
Name: Dr HemantajitGogoi

9. Signature:
Name: Dr Poli Borah

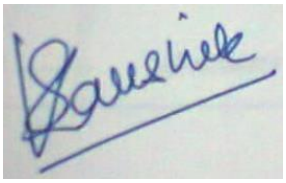
10. Signature:
Name: Dr. KoullaParpa

11. Signature:

12. Signature:

Name: Prof. Abderraouf Ben Abderrahman Name: Ajay kumar

:



Somya Kaushik
AGENT FOR THE APPLICANT
IN/PA/5019

To,
The Controller of Patents,
The Patent Office,
at Delhi

INTELLECTUAL PROPERTY INDIA
एकस्व/PATENTS|अभिकल्प/DESIGNS|
व्यापार चिह्न/TRADE MARKS|भौगोलिक
उपदर्शन/GEOGRAPHICAL INDICATIONS

सत्यमेव जयते
भारत सरकार
GOVERNMENT OF INDIA

एकस्व कार्यालय /THE PATENT OFFICE
बौद्धिक सम्पदा भवन/ I.P.O. BUILDING
एंटोप हिल/Antop Hill,
एस.एम.रोड/ S.M.Road,
मुंबई/ Mumbai- 400037
दूरभाष /Tel. No.: (022)24159194, 24141026
फ़ैक्स/ Fax: 022-24130387
ई मेल/ Email: mumbai-patent@nic.in
वेबसाइट /Website:http://ipindia.nic.in

सं.संख्या/Ref.No /आवेदन संख्या/Application No/ 202321012900 दिनांक/Date of Dispatch/Email: 25-01-2024

सेवा मे,/To
Somya Kaushik,
1004/E, Babarpur, New Delhi
Email : contact@elpisanalytix.com,elpisanalytix17@gmail.com

विषय: एकस्व अधिनियम, 1970 की धारा 12 व 13 तथा एकस्व नियम, 2003 के अधीन परीक्षण रिपोर्ट
Subject: Examination report under sections 12 & 13 of the Patents Act, 1970 and the Patents Rules, 2003.

1. उपर्युक्त आवेदन के संदर्भ मे परीक्षण रिपोर्ट (अर्थात, एकस्व नियम, 2003 (यथा संशोधित) के नियम 24-ख(3) में विनिर्दिष्ट आपत्तियों का प्रथम कथन) इसके साथ संलग्न है। यह रिपोर्ट परीक्षण हेतु अनुरोध दिनांक 20-03-2023 के उत्तर मे जारी की गयी है। परीक्षण रिपोर्ट का उत्तर दाखिल करने की अंतिम तिथि (अर्थात, इस रिपोर्ट में लगाई गयी सभी आवश्यकताओं के अनुपालन की अवधि) आवेदक को आपत्तियों का प्रथम कथन जारी होने की तिथि से छः माह है।
   Please find enclosed herewith an Examination Report (i.e. a first statement of objections as specified in Rule 24-B(3) of The Patents Rules, 2003 (as amended)) in respect of above-mentioned application. This report is issued with reference to a request for examination dated 20-03-2023.The last date for filing a response to the Examination Report (i.e. a period to comply with all the requirements raised in this examination report) is six months from the date on which the first statement of objections is issued to the Applicant.

2. यदि रिपोर्ट के अंतर्गत लगाई गयी आवश्यकताओं का अनुपालन एकस्व नियम, 2003 (यथा संशोधित) के नियम 24 ख(5) में विनिर्दिष्ट अवधि के भीतर अंदर अनुपालन नहीं किया गया तो एकस्व अधिनियम 1970 की धारा 21(1) के अधीन वर्तमान आवेदन को परित्यक्त माना जाएगा।
   The instant application shall be deemed to have been abandoned under Section 21(1) of The Patents Act, 1970, unless all the requirements raised in this report are complied with in the period as specified in Rule 24-B (5) of The Patents Rules, 2003 (as amended).

3. आपका ध्यान एकस्व नियम, 2003 के नियम 24 ख(6) के प्रावधानों की ओर भी आमंत्रित किया जाता है।
   Your attention is also invited to the provisions of Rule 24-B (6) of the Patents Rules 2003.

4. आपको सलाह दी जाती है कि शीघ्र निपटान हेतु अपना उत्तर शीघ्र प्रस्तुत करें।
   You are advised to file the reply at the earliest for early disposal.

Shubham Upadhyay
नियंत्रक पेटेंट/ Controller of Patents

संलग्न/Enclosed: अपरोक्त अनुसार/As above

टिप्पणी: यह इलेक्ट्रोनिक रूप से उत्पन्न रिपोर्ट है।
NOTE: This is an electronically generated report.

सभी पत्राचार नियंत्रक एकस्व को उपरोल्लिखित पते पर भेजा जाये।
All communications should be sent to the Controller of Patents at the above mentioned address.

THE PATENT OFFICE

परीक्षण रिपोर्ट /Examination Report

आवेदन संख्या /Application Number	202321012900
दाखिल करने की तिथि /Date of Filing	25-02-2023
पूर्विक्ता दिनांक /Date of Priority	--
पीसीटी अंतर्राष्ट्रीय आवेदन की संख्या व दिनांक / PCT International Application No. & Date	--
आवेदक /Applicant	Prof. Vasanthi Kadhiravan
परीक्षण हेतु अनुरोध की संख्या व दिनांक /Request for Examination No. & Date	R20232010621 20-03-2023
प्रकाशन की तिथि /Date of Publication	17-03-2023

इस परीक्षण रिपोर्ट के चार भाग हैं, अर्थात रिपोर्ट का सारांश, विस्तृत तकनीकी रिपोर्ट, औपचारिक आवश्यकताएँ तथा रिकॉर्ड मे दस्तावेज़ /
This examination report consists of four parts, namely summary of the report, detailed technical report, formal requirements and documents on record.

भाग -1: रिपोर्ट का सारांश
PART-I: SUMMARY OF THE REPORT

क्र. सं. /Sl. No.	अधिनियम के तहत आवश्यकताओं पर विस्तृत टिप्पणियां /Requirements under the Act		दावों की संख्या /Claim Numbers	टिप्पणी /Remarks
1.	धारा 2(1)(ज) के तहत आविष्कार /Invention u/s 2(1)(j)	आविष्कारी कदम / Inventive step	दावे /Claims:	हाँ /Yes
			दावे /Claims: 1-5	नहीं /No
2.	धारा 3 के अधीन पेटेंट-अयोग्यता (यदि हाँ, खंड 3(क-त) /Non-patentability u/s 3 (if yes, specify section3(a-p))		दावे /Claims: 1-5	हाँ /Yes k
			दावे /Claims:	नहीं /No
3.	[धारा 10(5) व 10(4) (ग)] के अधीन दावे /Claims [u/s 10(5) & 10(4) (c)]	स्पष्टता/ संक्षिप्तता /Clarity / Conciseness	दावे /Claims:	हाँ /Yes
			दावे /Claims: 1-5	नहीं /No
		परिभाषिकता /Definitive	दावे /Claims:	हाँ /Yes
			दावे /Claims: 1-5	नहीं /No
		क्षेत्र /Scope	दावे /Claims:	हाँ /Yes
			दावे /Claims: 1-5	नहीं /No

भाग –II विस्तृत तकनीकी रिपोर्ट
PART-II: DETAILED TECHNICAL REPORT

क. उद्धरित दस्तावेजों की सूची /A.List of documents cited:

(क) पेटेंट साहित्य / (a). Patent Literature :

क्र. सं. / Sl.no	दस्तावेज़ों का विवरण /Details of documents	प्रकाशन तिथि(दिन/माह/वर्ष) / Publication date	उद्धरित दस्तावेज़ का प्रासंगिक विवरण (पृष्ठ व अनुच्छेद संख्या) / Relevant description (page and paragraph no.) of cited document	उद्धरित दस्तावेज़ के प्रासंगिक दावे / Relevant claims of cited document	अभिकथित आविष्कार के दावे /Claims of alleged invention
1	D1: US20150328495A1 (Soba)	19/11/2015	whole document, especially, abstract, paragraphs [0053] - [0103]; figures 1 - 5		1-5

2	D2: US11452916B1 (Kahn - DP Technologies Inc)	27/09/2023	whole document, especially, abstract, columns 2 - 10; figures 1 - 6		1-5

(ख) गैर-पेटेंट साहित्य /(b).Non-patent literature

कोई दस्तावेज़ उद्धृत नहीं है /No Document Cited

ख. अधिनियम के तहत आवश्यकताओं पर विस्तृत टिप्पणियां /B. Detailed observations on the requirements under the Act:

(1).आविष्कारी कदम / INVENTIVE STEP:

(I) ऊपर उद्धरित दस्तावेज़(जों) के संदर्भ D1-D2 मे स्पष्ट अध्यापन(नों) को ध्यान मे रखते हुए, निम्नलिखित कारणों से दावा(वों) (1-5) मे आविष्कारी कदम की कमी है
Claim(s) (1-5) lack(s) inventive step, being obvious in view of teaching (s) of cited document(s) above under reference D1-D2 for the following reasons:

The subject matter as disclosed in claims 1-5 of the instant application does not constitute an invention under section 2(1)(ja) of the Patents Act, 1970 (as amended) as it lacks inventive step in view of teachings from the cited document(s) D1-D2 along with common general knowledge in the art.

The instant alleged invention discloses an exercise mat with electrical hardware, sensors, and a wired or wireless software application configured to optimize exercise mechanics and training routines, e.g., a yoga practice.

Cited prior art document D1: US20150328495A1 (Soba) discloses a yoga and exercise mat comprising a body having a longitudinal length, a width and a top surface; body position marking locations provided on the top surface of the mat; and markers operatively associated with certain of the body position marking locations, such that an individual using the mat can obtain enhanced results during physical activity by associating the markers with the marking locations for maintaining proper alignment, correct form, positioning and posture during yoga or exercise.

Regarding subject matter of independent claim 1,

I. An AI based yoga mat with attachable markers comprising:
II. a flat mat having a plurality of perimeter edges and an upper surface upon which a person may practice yoga;
III. a body position marking locations in a grid-like pattern on the upper surface of the mat;
IV. a set of pressure sensing sensors configured to sense weight distribution and position of the user's body;
V. an AI based processor configured to assist a user in performing yoga and other exercises with real time data of weight distribution and position of the user's body as it applies pressure to the yoga mat; and
VI. a feedback module to processed and compared the data for each yoga pose, and to provide feedback to the user to correct or confirm proper weight distribution and position. (refer D1: whole document, especially, abstract, paragraphs [0053] - [0103]; figures 1 - 5)

Cited prior art document D1 fails to sense weight distribution.

Although, claim 1 is not inventive in view of cited document(s) D2 combined with teachings of cited prior art document D1.

Cited prior art document D2: US11452916B1 (Kahn - DP Technologies Inc) discloses a yoga under-mat to be positioned under an exercise mat, to make the exercise mat a smart mat. The yoga under-mat including a plurality of sensors to monitor a user's health data, while the user is performing exercises, and to provide data to the user.

Kindly refer D2: whole document, especially, abstract, columns 2 - 10; figures 1 - 6.

Special attention is drawn to D2: column 3, line 34: “Exercise state logic 220 utilizes the data from the bio-sensors 212 to determine the user's body position and weight distribution.”

Further, claims 2-5 do not appear to contain any additional technical features as compared to claim 1, which in combination with the features of any claim to which they refer, meet the requirements of section 2(1)(ja) of the Patents Act, 1970 (as amended) over the teachings of cited document(s) D1-D2, mutatis-mutandis, being obvious to a person skilled in the art.

Hence, claims 1-5 lack inventive step and they do not meet the requirement of section 2(1)(ja) of The Patents Act, 1970 (as amended) since the features encompassed by the said claims are directly derivable from the cited prior art document(s) D1-D2. Hence, combined with common general knowledge in the art, the instant application constitutes a subject matter which makes the alleged invention a matter of routine experiment for a person skilled in the art.

(2).पेटेंट अयोग्यता /NON PATENTABILITY:

(I) निम्नलिखित कारणों से धारा 3 के खंड (k)के प्रावधान के तहत दावा(वे) (1-5) सांविधिक रूप से पेटेंट योग्य नहीं हैं /
Claim(s) (1-5) are statutorily non-patentable under the provision of clause (k) of Section 3 for the following reasons:

Claims 1-5 are system claims which relate to an AI based yoga mat with attachable markers but do not disclose any functional and structural limitations of the feature of the said claims but in turn represents computer program per se (readable instructions with the help of algorithm) in sequential manner and implemented on the hardware (conventional systems) and software environment with certain protocols (algorithms) without exhibiting any hardware orientation/dependence for collective and collaborative implementation with the executable instructions showing any technical enhancement and going beyond the "normal" physical interactions between the program (software) and the computer (hardware) on which it is run in form of a computer program. So, the said system claims represent a set of instructions executed on a general purpose and conventional computer / processor / computing platform without showing any technical enhancement as a whole, which attract provisions of computer program per-se and hence, prima-facie, fall within the purview of clause (k) of section (3) of the Patents Act, 1970 (as amended).

(3).प्रकटन की दक्षता /SUFFICIENCY OF DISCLOSURE:

(I) सार /Abstract:

The abstract should be prepared as per the instructions given in rule 13(7) of the Patents Rules, 2016 (as

amended). The abstract should contain a concise summary of the matter contained in the specification and the summary shall indicate the technical field to which the invention belongs to, technical advancement of the invention as compared to the existing knowledge and principal use of the invention excluding any speculative use.

(4).क्षेत्र /SCOPE:

(I) दावा(वे) 1-5 आविष्कार के उस क्षेत्र जिस के लिए संरक्षण का दावा किया गया है उसे निम्नलिखित कारणों से परिभाषित नहीं करता(ते) है.
Claim(s) 1-5 does/do not define the scope of invention for which the protection is claimed for the following reasons:

1. The independent claim(s) do(es) not have any constructional/structural features, which makes the scope of the instant application unclear and it is not falling within the boundary of the scope for which the protection is sought. Hence said claims do not satisfy the definition of invention stated under section 10 (4) (c)of the Patents Act, 1970 (as amended). Hence the same cannot be allowed.
2. The principal claim(s) should be characterized and inventive features should be clearly brought out. Drafting of claims should be done in such a manner that independent claim will highlight the all essential features of the invention while all other claims will depends on the main claim and explain the individual features to make the invention more clear, definitive and within the well-defined boundary and scope of the specification disclosed.

(5).स्पष्टता एवं संक्षिप्तता /CLARITY AND CONCISENESS:

(I) दावा(वे) 1-5 के संबंध मे स्पष्ट रूप से परीभाषित नहीं हैं.
Claim(s) 1-5 are not clearly worded in respect of:

1. The expression(s) "at least", "plurality", "one or more", "including", "includes" are not allowed in claim(s) as they are not clear and definite.

(6).परिभाषिकता /DEFINITIVENESS:

(I) दावा(वे)1-5 निम्नलिखित कारणों से आविष्कार को पर्याप्त रूप से परीभाषित नहीं करता(ते) हैं
Claim(s) 1-5 do not sufficiently define the invention for the reasons as follows:

1. Claims containing terms that are introduced in the claims for the first time should be recited using the indefinite articles "a" or "an".
2. The independent claims should be cast in the two-part form where appropriate, with those features known in combination from the prior art being placed in the preamble and the remaining features being included in the characterizing part.
3. Reference numerals shall be supplemented in claims to enhance the intelligibility of claims and comply with rule 13 (4) of the Patents Rules, 2003 (as amended).

(7).अन्य आवश्यकताएँ /OTHERS REQUIREMENTS:

(I)

If any amendment is necessitated in the complete specification then it is required to identify (submission of marked copy) the amendments carried out and to indicate the portion (page number and line number) of the complete specification as filed on which these amendments are based on. Further, the pages wherever

amendments are carried out need to be freshly typed on white pages and to be filed in duplicate.

भाग – III: औपचारिक आवश्यकताएँ /PART-III: FORMAL REQUIREMENTS

आपत्तियां /Objections	टिप्पणी /Remarks
Date and Signature of Applicant	All the forms, documents, and drawings shall be duly signed by the applicant or his authorized patent agent.
Statement & Under Taking (Form 3 Details)	Latest status of the foreign filing particulars of all applications made in foreign countries should be filed within the prescribed time period under sub-section (1) of section 8 of the Patents Act, 1970 (as amended). Details regarding application for Patents which may be filed outside India from time to time for the same or substantially the same invention should be furnished within six months from the date of filing of the said application under sub-section (2) of section 8 and sub-rule (1) of rule 12 of the Patents Rules, 2003 (as amended).
Registered Agent as per Patent Agent Register	Registration number of the Patent agent shall be present in the request letters, various forms and power of authority submitted with this office.
Format of Specification (rule 13)	All documents and copies of the documents, except affidavits and drawings, filed with patent office, under clause (d) of sub-rule (1) of rule 9 of the Patents Rules, 2003 (as amended), shall contain the numbering to every fifth line of each page of the description and each page of the claims at right half of the left margin. The preamble of the claims shall begin with the phrase: – "I/We claim" (Form-2, para-5). The title of the invention shall be prepared in accordance with rule 13(7)(a) of the Patents Rules, 2003 (as amended). Irrelevant portion should be deleted and blank spaces should be scored out in the complete specification. Pages of complete specification should be numbered serially starting from Form 2 as page no.1. Date and sign of applicant(s) / authorized agent shall be present at the end of claims as per Form 2 Para 6 of Patents Act, 1970 (as amended).
Format of Drawings	The Drawings referred to in the specification should be prepared by the instructions contained in Rule 15 of the Patent Rules, 2003 (as amended).
Other Deficiencies	Revised form 1 is required to be filed where in form 1, point 4, option (NO) is incorrectly ticked.

भाग-IV: रिकॉर्ड मे दस्तावेज़ /PART-IV: DOCUMENTS ON RECORD

निम्नलिखित दस्तावेज़ों के आधार पर यह परीक्षण रिपोर्ट तैयार की गयी है
The examination report has been prepared based on the following documents:

कार्यवाही तिथि /	कार्यवाही संख्या /Docket	

THE PATENT OFFICE

डॉकेट तिथि / Docket Date	डॉकेट संख्या /Docket Number	पूर्विष्टि संख्या विवरण /Entry Number Description
25 Feb 2023	20104	12-Request For Early Publication - Form 9
25 Feb 2023	20104	1-New Application For Patent With Provisional /Complete Specification
20 Mar 2023	27173	28(i)-Request For Examination After 18 months Publication - Form 18

परीक्षक का नाम /Name of the Examiner: NIKHIL PRASAD

परीक्षक स्थान /Examiner Location: Kolkata

नियंत्रक का नाम /Name of the Controller: Shubham Upadhyay

Controller's Email: shubham90.ipo@gov.in

नियंत्रक स्थान /Controller Location: Delhi

टिप्पणी: परीक्षण रिपोर्ट का उत्तर दाखिल करने की अंतिम तिथि / Note: Last date for filing response to the Examination Report: 25-07-2024

FORM 18 THE PATENT ACT, 1970 (39 of 1970) & THE PATENTS RULES, 2003 **REQUEST/ EXPRESS REQUEST FOR EXAMINATION OF APPLICATION FOR PATENT** [See section 11B and rules 20(4) (ii), 24B (1) (i)]	**(FOR OFFICE USE ONLY)** RQ.No.: Filing Date: Amount of Fee paid: CBRNo: Signature:

1. APPLICANT(S)/ OTHER INTERESTEDPERSON(S)

(a) Name: **1. Prof. Vasanthi Kadhiravan;**
2 Mrs. P. Yoga Lakshmi;
3 Dr. S.Saroja;
4 Dr. P. Kumaravelu;
5 Karuppasamy Govindasamy;
6 MouPramanik;
7 Ms. Dilpreet kaur;
8 Dr Hemantajit Gogoi;
9 Dr Poli Borah;
10 Dr. KoullaParpa;
11 Prof. Abderraouf Ben Abderrahman;
12 **Ajay kumar**

(b) Nationality: **Indian; Cyprus; Tunisia**

Address: 1. **Professor & Head , Department of Physical Education, University of Mumbai, Kalina Campus, Santacruz (East), Mumbai – 400098;**

2. **Assistant Professor (Sr.G) Department of Computer Science, College of Science and Humanities, SRM Institute of Science and Technology, Katankulathur 603203;**
3. **Associate Professor cum Coordinator, Centre for Yoga Education, Alagappa University, Karaikudi- 630003;**
4. **Department of Physical Education, Tamilnadu Physical Education and Sports University, Mellakottaiyur, Chennai-600127;**
5. **Doctoral Research Fellow, Department of Physical Education and Sports Sciences, College of Science and Humanities, SRM Institute of Science and Technology, Kattankulathur, Tamil nadu, India;**
6. **Ph.D Research Scholar, Department of Yoga, College of Science and Humanities, SRM Institute of Science and Technology, Kattankulathur, Tamilnadu, India-603203;**
7. **Assistant Professor &Director Physical Education , suryadatta Group of Institutes , Pune, India;**
8. **Village: TengaAamMajGaon, PO: Ghilamara, Dist: Lakhimpur, PIN: 787053, Assam;**
9. **Village: TengaAamMajGaon, PO: Ghilamara, Dist: Lakhimpur, PIN: 787053, Assam;**
10. **Faculty of Sports and Exercise Science, UCLan University of Cyprus, Pyla 7080, Cyprus;**
11. **Higher Institute of Sport and Physical Education of Ksar-Said, University of Manouba, Tunisia;**
12. **Faculty sports physiotherapy, Ambala, Haryana, India.**

(c) Date of publication of the application under section 11A: **17/03/2023**

2. STATEMENT IN CASE OF REQUEST FOR EXAMINATION MADE BY THE APPLICANT(S)

We hereby request that our application for patent no. **202321012900** filed on **25/02/2023** the invention titled **"AI BASED YOGA MAT WITH ATTACHABLE MARKERS"** shall be examined under sections 12 and 13 of the Act.

Or

~~I/We hereby make an express request that my/our application for patent no…… filed on…… based on Patent Cooperation Treaty (PCT) application no….. dated……. made in country…… shall be examined under sections 12 and 13 of the Act, immediatelywithout waiting for the expiry of 31 months as specified in rule 20(4)(ii).~~

~~**3. STATEMENT IN CASE OF REQUEST FOR EXAMINATION MADE BY ANY OTHER INTERESTED PERSON**~~

~~I/We the interested person request for the examination of theapplicationno. ..... dated ……. filed by the applicant……titled..... under sections 12 and 13 of theAct.~~

~~As an evidence of my/our interest in the application for patent following documents are submitted.~~
~~(a)……~~
~~……..~~

4. ADDRESS FOR SERVICE

Ms. Somya Kaushik (Patent Agent)
1004/E, Lohiya Gali No. 4, Babarpur, New Delhi,-110032

Dated this 18th day of March, 2023

Signature: 

Somya Kaushik
AGENT FOR THE APPLICANT
IN/PA/5019)

To
The Controller of Patents
The Patent Office, at Delhi

FORM 2

THE PATENTS ACT, 1970

(39 of 1970)

&

THE PATENTS RULES, 2003

COMPLETE SPECIFICATION

(See Section 10; rule 13)

Title of the Invention

"AI BASED YOGA MAT WITH ATTACHABLE MARKERS"

APPLICANTS:

Name : Prof. Vasanthi Kadhiravan; Mrs. P. Yoga Lakshmi; Dr. S.Saroja; Dr. P.Kumaravelu; Karuppasamy Govindasamy; MouPramanik; Ms. Dilpreet kaur; Dr Hemantajit Gogoi; Dr Poli Borah; Dr. KoullaParpa; Prof. Abderraouf Ben Abderrahman; Ajay kumar

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Department of Yoga, College of Science and Humanities, SRM Institute of Science and Technology, Kattankulathur, Tamilnadu, India- 603203; Assistant Professor &Director Physical Education , suryadatta Group of Institutes , Pune, India; Village: TengaAamMajGaon, PO: Ghilamara, Dist: Lakhimpur, PIN: 787053, Assam; Village: TengaAamMajGaon, PO: Ghilamara, Dist: Lakhimpur, PIN: 787053, Assam; Faculty of Sports and Exercise Science, UCLan University of Cyprus, Pyla 7080, Cyprus; Higher Institute of Sport and Physical Education of Ksar-Said, University of Manouba, Tunisia; Faculty sports physiotherapy, Ambala, Haryana, India.

The following specification particularly describes the invention and the manner in which it is performed.

TECHNICAL FIELD

[0001] The invention relates to the field of a yoga mats, and more specifically to an exercise mat with electrical hardware, sensors, and a wired or wireless software application configured to optimize exercise mechanics and training routines, e.g., a yoga practice.

BACKGROUND ART

[0002] Background description includes information that may be useful in understanding the present invention. It is not an admission that any of the information provided herein is prior art or relevant to the presently claimed invention, or that any publication specifically or implicitly referenced is prior art.

[0003] Staying physically active and exercising is an essential part of life, as maintaining an active life-style not only replenishes a person's state of mind by releasing chronic tension and increasing self-awareness, but also ensures, that chronic diseases and various other aliments are effectively kept in check. It is clear, that as the incidence of debilitating medical conditions such as but not limited to heart diseases and cancer diminish due to an improved public awareness regarding maintaining a healthy life-style and regular physical activity, there is still an unmet need for exercise mats from the perspective of actively exercising individuals, that greatly aide in the improvement of their physical form and maintenance of correct posture during the physical work-out session.

[0004] Yoga and exercise mats have been accessible in a plethora of distinct shapes, colors, designs and materials heretofore. Exercise and yoga mat designs with printed indicia and grids are available in order to assist visually impaired exercisers in maintaining a proper body posture and alignment and to assess incremental improvements in flexibility.

[0005] A standard yoga mat typically comprises a sheet of foamed or solid elastomeric material (e.g., polyvinyl chloride (PVC)) having a plurality of layers of different material are used. For example, yoga mats sold for use in hot yoga or Bikram yoga may have an absorbent upper layer (e.g., terry cloth material)

permanently affixed to an elastomeric mat lower layer such that the elastomeric lower layer will contact the underlying floor while the yoga practitioner sits/stands on the towel-like upper layer. The towel like upper layer may then absorb perspiration. One commercially available example is the Breath TM Yoga Mat marketed by Breath Yoga Mats or Vancouver, British Columbia which has a cotton terry top layer, a middle layer of absorbent cushioning fibers and a coated, brushed bottom layer for gripping the underlying floor surface. However, the multi-layer yoga mats of the prior art have typically not been designed to permit periodic detachment and laundering of the upper perspiration-absorbing layer.

[0006] Therefore, there a need for an exercise mat with electrical hardware, sensors, and a wired or wireless software application configured to optimize exercise mechanics and training routines, e.g., a yoga practice. Therefore, the present disclosure overcomes the above-mentioned problem associated with the traditionally available method or system, any of the above-mentioned inventions can be used with the presented disclosed technique with or without modification.

[0007] All publications herein are incorporated by reference to the same extent as if each individual publication or patent application were specifically and individually indicated to be incorporated by reference. Where a definition or use of a term in an incorporated reference is inconsistent or contrary to the definition of that term provided herein, the definition of that term provided herein applies and the definition of that term in the reference does not apply.

OBJECTS OF THE INVENTION

[0008] The principal object of the present invention is to overcome the disadvantages of the prior art.

[0009] Another object of the present invention is to provide an AI based yoga mat with attachable markers.

[0010] Another object of the present invention is to provide an exercise mat with electrical hardware, sensors, and a wired or wireless software application

configured to optimize exercise mechanics and training routines, e.g., a yoga practice.

[0011] Another object of the present invention is to provide an elegant, reliable and precise approach towards the AI based yoga mat with attachable markers.

[0012] Yet another object of the present invention is to provide a process of improving functionalities of the AI based yoga mat with attachable markers.

SUMMARY

[0013] The invention relates to the field of a yoga mats, and more specifically to an exercise mat with electrical hardware, sensors, and a wired or wireless software application configured to optimize exercise mechanics and training routines, e.g., a yoga practice.

[0014] The AI based yoga mat with attachable markers includes a flat mat having a plurality of perimeter edges and an upper surface upon which a person may practice yoga, a body position marking locations in a grid-like pattern on the upper surface of the mat, a set of pressure sensing sensors configured to sense weight distribution and position of the user's body, an AI based processor configured to assist a user in performing yoga and other exercises with real time data of weight distribution and position of the user's body as it applies pressure to the yoga mat, and a feedback module to processed and compared the data for each yoga pose, and to provide feedback to the user to correct or confirm proper weight distribution and position.

[0015] According to an aspect, the markers have a color that is different from and contrasts with the color of the mat.

[0016] According to an aspect, the markers operatively associated with certain of the body position marking locations, such that an individual using the mat can obtain enhanced results during physical activity by associating the

markers with the marking locations for maintaining proper alignment, correct form, positioning and posture during yoga or exercise.

[0017] According to an aspect, the processor operatively connected to the yoga mat that reads and processes data relating to weight distribution and position of the user.

[0018] According to an aspect, the upper surface of the mat is made of a different material than the rest of the body and has a sufficient strength and thickness to securely retain the markers to the holes.

[0019] These and other features will become apparent from the following detailed description of illustrative embodiments thereof, which is to be read in connection with the accompanying drawings. While the invention has been described and shown with reference to the preferred embodiment, it will be apparent that variations might be possible that would fall within the scope of the present invention.

BRIEF DESCRIPTION OF DRAWINGS

[0020] So that the manner in which the above-recited features of the present invention can be understood in detail, a more particular description of the invention, briefly summarized above, may have been referred by embodiments, some of which are illustrated in the appended drawings. It is to be noted, however, that the appended drawings illustrate only typical embodiments of this invention and are therefore not to be considered limiting of its scope, for the invention may admit to other equally effective embodiments.

[0021] These and other features, benefits, and advantages of the present invention will become apparent by reference to the following text figure, with like reference numbers referring to like structures across the views, wherein: Figures attached: N.A.

DETAILED DESCRIPTION OF THE INVENTION

[0022] While the present invention is described herein by way of example using embodiments and illustrative drawings, those skilled in the art will recognize that the invention is not limited to the embodiments of drawing or drawings described and are not intended to represent the scale of the various components. Further, some components that may form a part of the invention may not be illustrated in certain figures, for ease of illustration, and such omissions do not limit the embodiments outlined in any way. It should be understood that the drawings and the detailed description thereto are not intended to limit the invention to the particular form disclosed, but on the contrary, the invention is to cover all modifications, equivalents, and alternatives falling within the scope of the present invention as defined by the appended claim.

[0023] As used throughout this description, the word "may" is used in a permissive sense (i.e. meaning having the potential to), rather than the mandatory sense, (i.e. meaning must). Further, the words "a" or "an" mean "at least one" and the word "plurality" means "one or more" unless otherwise mentioned. Furthermore, the terminology and phraseology used herein are solely used for descriptive purposes and should not be construed as limiting in scope. Language such as "including," "comprising," "having," "containing," or "involving," and variations thereof, is intended to be broad and encompass the subject matter listed thereafter, equivalents, and additional subject matter not recited, and is not intended to exclude other additives, components, integers, or steps. Likewise, the term "comprising" is considered synonymous with the terms "including" or "containing" for applicable legal purposes. Any discussion of documents acts, materials, devices, articles, and the like are included in the specification solely for the purpose of providing a context for the present invention. It is not suggested or represented that any or all these matters form part of the prior art base or were common general knowledge in the field relevant to the present invention.

[0024] In this disclosure, whenever a composition or an element or a group of elements is preceded with the transitional phrase "comprising", it is understood

that we also contemplate the same composition, element, or group of elements with transitional phrases “consisting of”, “consisting”, “selected from the group of consisting of, “including”, or “is” preceding the recitation of the composition, element or group of elements and vice versa.

[0025] The present invention is described hereinafter by various embodiments with reference to the accompanying drawing, wherein reference numerals used in the accompanying drawing correspond to the like elements throughout the description. This invention may, however, be embodied in many different forms and should not be construed as limited to the embodiment set forth herein. Rather, the embodiment is provided so that this disclosure will be thorough and complete and will fully convey the scope of the invention to those skilled in the art. In the following detailed description, numeric values and ranges are provided for various aspects of the implementations described. These values and ranges are to be treated as examples only and are not intended to limit the scope of the claims. In addition, several materials are identified as suitable for various facets of the implementations.

[0026] The invention relates to the field of a yoga mats, and more specifically to an exercise mat with electrical hardware, sensors, and a wired or wireless software application configured to optimize exercise mechanics and training routines, e.g., a yoga practice.

[0027] The AI based yoga mat with attachable markers includes a flat mat having a plurality of perimeter edges and an upper surface upon which a person may practice yoga, a body position marking locations in a grid-like pattern on the upper surface of the mat, a set of pressure sensing sensors configured to sense weight distribution and position of the user's body, an AI based processor configured to assist a user in performing yoga and other exercises with real time data of weight distribution and position of the user's body as it applies pressure to the yoga mat, and a feedback module to processed and compared the data for each yoga pose, and to provide feedback to the user to correct or confirm proper weight

distribution and position.

[0028] According to an aspect, the markers have a color that is different from and contrasts with the color of the mat.

[0029] According to an aspect, the markers operatively associated with certain of the body position marking locations, such that an individual using the mat can obtain enhanced results during physical activity by associating the markers with the marking locations for maintaining proper alignment, correct form, positioning and posture during yoga or exercise.

[0030] According to an aspect, the processor operatively connected to the yoga mat that reads and processes data relating to weight distribution and position of the user.

[0031] According to an aspect, the upper surface of the mat is made of a different material than the rest of the body and has a sufficient strength and thickness to securely retain the markers to the holes.

[0032] Interactive exercise mat apparatuses, systems, and methods of use are shown and described in one embodiment, an exercise mat may include electrical hardware, sensors, and a wired or wireless software application configured to optimize exercise mechanics and training routines, e.g., a yoga practice. The mat may be a pressure sensing yoga mat that may communicate via Bluetooth or other wired or wireless compatible communication protocol to a smart phone, tablet, computer, or other device. The mat may assist a user in performing yoga and other exercises with real time data of weight distribution and position of the user's body as it applies pressure to the yoga mat. This data may be processed and compared to an ideal position for each yoga pose, and feedback may be provided to the user to correct or confirm proper weight distribution and position. A processor may be operatively connected to the yoga mat that reads and processes data relating to weight distribution and position of the user.

[0033] In accordance with various aspects of the subject specification, an example embodiment may employ classifiers that are explicitly trained (e.g., via a generic training data) as well as implicitly trained (e.g., via observing user behavior, user preferences, historical information, receiving extrinsic information). For example, support vector machines may be configured via learning or training phase within a classifier constructor and feature selection module. Thus, the classifier(s) may be used to automatically learn and perform a number of functions, including but not limited to determining exercise routines, user identities, target goals for dietary or fitness needs, and the likes. This learning may be on an individual basis, i.e., based solely on a single user, or may apply across a set of or the entirety of the user base. Information from the users may be aggregated and the classifier(s) may be used to automatically learn and perform a number of functions based on this aggregated information. The information may be dynamically distributed, such as through an automatic update, a notification, or any other method or means, to the entire user base, a subset thereof or to an individual user.

[0034] Additionally, the mats may be coupled with one or more of warning devices, light emitting diodes (LEDs), memory devices, associated speakers, sound and speech synthesizers, audio/video feedback, realignment sensors, heart rate monitors, pulse monitors, gyroscopic sensors, or voice guidance to correct postures based on body measurements including height and weight, weight distribution, heart rate, length and timing of posture held, position of the user's upper body which may not be in contact with the mat, and timing of breath. Furthermore, provisions can be made for reading of directional movement including spiral movements of energy lines (meridians) through the body; lifting and alignment of bones and skeletal structure, musculature, the pelvis, shoulders, spine, vertebrae, vertebral column, and biofeedback and instruction can be provided based thereon. The systems may further provide measurement of vital signs and brain frequency to give biofeedback on meditative state, including responsive light or audio guidance or voice guidance for breath control, programs

for breath control techniques to change brain/meditative frequencies, and deep relaxation and de-stress techniques, programs and control systems.

[0035] The timing and biofeedback systems may, for example, instruct the user on how long to hold a pose while also correlating the length held with the rhythm and timing of the breath. Breathing is a fundamental and important guideline to physical movement, bodily awareness, and mind-body control. Biofeedback systems may also provide feedback on biorhythms and functions of the body such as heart rate. The biofeedback systems may also assist with mental focus while training. Machine generation of original flow sequencing and programming can also be based upon the user's level of physical capability, performance, and increases/improvements in skill, flexibility, agility, strength, overall health, and brain function.

[0036] The mat of the present invention of the preferred embodiment has attachable and detachable markers that are produced and manufactured in a plurality of forms, shapes, styles and colors. Instead of the plug and hole configuration described previously, other forms of attachment, such as Velcro, a reusable adhesive, buttons or snaps, or any type of temporary or subsequently removable securement can be used to temporarily secure the markers to the mat. In some embodiments, the areas of attachment can be magnetized and the markers magnetically adhered to the magnetized locations as desired.

[0037] While the foregoing describes various embodiments of the invention, other and further embodiments of the invention may be devised without departing from the basic scope thereof. The scope of the invention is determined by the claims that follow. The invention is not limited to the described embodiments, versions or examples, which are included to enable a person having ordinary skill in the art to make and use the invention when combined with information and knowledge available to the person having ordinary skill in the art.

[0038] Thus, the scope of the present disclosure is defined by the appended claims and includes both combinations and sub-combinations of the various

features described hereinabove as well as variations and modifications thereof, which would occur to persons skilled in the art upon reading the foregoing description.

CLAIMS

I/We Claim:

1. An AI based yoga mat with attachable markers comprising:

a flat mat having a plurality of perimeter edges and an upper surface upon which a person may practice yoga;

a body position marking locations in a grid-like pattern on the upper surface of the mat;

a set of pressure sensing sensors configured to sense weight distribution and position of the user's body;

an AI based processor configured to assist a user in performing yoga and other exercises with real time data of weight distribution and position of the user's body as it applies pressure to the yoga mat; and

a feedback module to processed and compared the data for each yoga pose, and to provide feedback to the user to correct or confirm proper weight distribution and position.

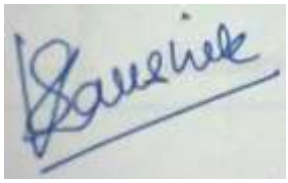
2. The AI based yoga mat with attachable markers as claimed in claim 1, wherein the markers have a color that is different from and contrasts with the color of the mat.

3. The AI based yoga mat with attachable markers as claimed in claim 1, wherein the markers operatively associated with certain of the body position marking locations, such that an individual using the mat can obtain enhanced results during physical activity by associating the markers with the marking locations for maintaining proper alignment, correct form, positioning and posture during yoga or exercise.

4. The AI based yoga mat with attachable markers as claimed in claim 1, wherein the processor operatively connected to the yoga mat that reads and processes data relating to weight distribution and position of the user.

5. The AI based yoga mat with attachable markers as claimed in claim 1, wherein the upper surface of the mat is made of a different material than the rest of the body and has a sufficient strength and thickness to securely retain the markers to the holes.

Dated this 22nd day of February, 2023



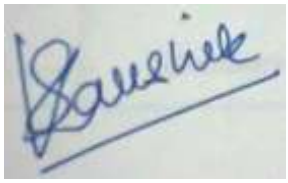
Somya Kaushik
AGENT FOR THE APPLICANT
IN/PA/5019

ABSTRACT

“AI BASED YOGA MAT WITH ATTACHABLE MARKERS”

The invention relates to the field of a yoga mats, and more specifically to an exercise mat with electrical hardware, sensors, and a wired or wireless software application configured to optimize exercise mechanics and training routines, e.g., a yoga practice. The AI based yoga mat with attachable markers includes a flat mat having a plurality of perimeter edges and an upper surface upon which a person may practice yoga, a body position marking locations in a grid-like pattern on the upper surface of the mat, a set of pressure sensing sensors configured to sense weight distribution and position of the user's body, an AI based processor configured to assist a user in performing yoga and other exercises with real time data of weight distribution and position of the user's body as it applies pressure to the yoga mat, and a feedback module to processed and compared the data for each yoga pose, and to provide feedback to the user to correct or confirm proper weight distribution and position.

Dated this 22nd day of February, 2023



Somya Kaushik
AGENT FOR THE APPLICANT
IN/PA/5019

FORM 5
THE PATENTS ACT 1970
(39 of 1970)
&
THE PATENTS RULES, 2003
DECLARATION AS TO INVENTORSHIP
[See section 10 (6) and 13 (6)]

1. APPLICANT

Name	Nationality	Address
Prof. Vasanthi Kadhiravan	Indian	Professor & Head , Department of Physical Education, University of Mumbai, Kalina Campus, Santacruz (East), Mumbai - 400098
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Dr. P. Kumaravelu	Indian	Department of Physical Education, Tamilnadu Physical Education and Sports University, Mellakottaiyur, Chennai-600127
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MouPramanik	Indian	Ph.D Research Scholar, Department of Yoga, College of Science and Humanities, SRM Institute of Science and Technology, Kattankulathur, Tamilnadu, India- 603203
Ms. Dilpreet kaur	Indian	Assistant Professor &Director Physical Education , suryadatta Group of Institutes , Pune, India
Dr Hemantajit Gogoi	Indian	Village: TengaAamMajGaon, PO: Ghilamara, Dist: Lakhimpur, PIN: 787053, Assam

Dr Poli Borah	Indian	Village: TengaAamMajGaon, PO: Ghilamara, Dist: Lakhimpur, PIN: 787053, Assam
Dr. KoullaParpa	Cyprus	Faculty of Sports and Exercise Science, UCLan University of Cyprus, Pyla 7080, Cyprus
Prof. Abderraouf Ben Abderrahman	Tunisia	Higher Institute of Sport and Physical Education of Ksar-Said, University of Manouba, Tunisia
Ajay kumar	Indian	Faculty sports physiotherapy, Ambala, Haryana, India

hereby declare that the true and first inventor of the invention disclosed in the complete specification filed in pursuance of our application numbered _____ and titled **"AI BASED YOGA MAT WITH ATTACHABLE MARKERS"** is:

2. INVENTOR

Name	Nationality	Address
Prof. Vasanthi Kadhiravan	Indian	Professor & Head , Department of Physical Education, University of Mumbai, Kalina Campus, Santacruz (East), Mumbai - 400098
Mrs. P. Yoga Lakshmi	Indian	Assistant Professor (Sr.G) Department of Computer Science, College of Science and Humanities, SRM Institute of Science and Technology, Katankulathur 603203
Dr. S.Saroja	Indian	Associate Professor cum Coordinator, Centre for Yoga Education, Alagappa University, Karaikudi- 630003
Dr. P.Kumaravelu	Indian	Department of Physical Education, Tamilnadu Physical Education and Sports University, Mellakottaiyur, Chennai-600127
Karuppasamy Govindasamy	Indian	Doctoral Research Fellow, Department of Physical Education and Sports Sciences, College of Science and Humanities, SRM Institute of Science and Technology, Kattankulathur, Tamil nadu, India

MouPramanik	Indian	Ph.D Research Scholar, Department of Yoga, College of Science and Humanities, SRM Institute of Science and Technology, Kattankulathur, Tamilnadu, India- 603203
Ms. Dilpreet kaur	Indian	Assistant Professor &Director Physical Education , suryadatta Group of Institutes , Pune, India
Dr Hemantajit Gogoi	Indian	Village: TengaAamMajGaon, PO: Ghilamara, Dist: Lakhimpur, PIN: 787053, Assam
Dr Poli Borah	Indian	Village: TengaAamMajGaon, PO: Ghilamara, Dist: Lakhimpur, PIN: 787053, Assam
Dr. KoullaParpa	Cyprus	Faculty of Sports and Exercise Science, UCLan University of Cyprus, Pyla 7080, Cyprus
Prof. Abderraouf Ben Abderrahman	Tunisia	Higher Institute of Sport and Physical Education of Ksar-Said, University of Manouba, Tunisia
Ajay kumar	Indian	Faculty sports physiotherapy, Ambala, Haryana, India

Dated this 22nd day of February, 2023

1. Signature: 
Name: Prof. Vasanthi Kadhiravan

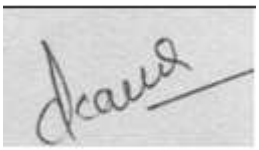
2. Signature: 
Name: Mrs. P. Yoga Lakshmi

3. Signature: 
Name: Dr. S.Saroja

4. Signature: 
Name: Dr. P.Kumaravelu

5. Signature: 
Name: Karuppasamy Govindasamy

6. Signature: 
Name: Mou Pramanik

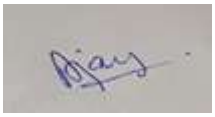
7. Signature: 
Name: Ms. Dilpreet kaur

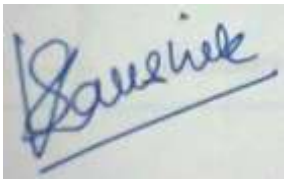
8. Signature: 
Name: Dr HemantajitGogoi

9. Signature: 
Name: Dr Poli Borah

10. Signature: 
Name: Dr. KoullaParpa

11. Signature: 
Name: Prof. Abderraouf Ben Abderrahman

12. Signature: 
Name: Ajay kumar



Somya Kaushik
AGENT FOR THE APPLICANT
IN/PA/5019

To,
The Controller of Patents,
The Patent Office,
at Delhi

Applicant Name: Prof. Vasanthi Kadhiravan; Mrs. P. Yoga Lakshmi; Dr. S.Saroja; Dr. P.Kumaravelu; Karuppasamy Govindasamy; MouPramanik; Ms. Dilpreet kaur; Dr Hemantajit Gogoi; Dr Poli Borah; Dr. KoullaParpa; Prof. Abderraouf Ben Abderrahman; Ajay kumar

Application Number:

Total No. of Sheets: 1
Sheet No. 1

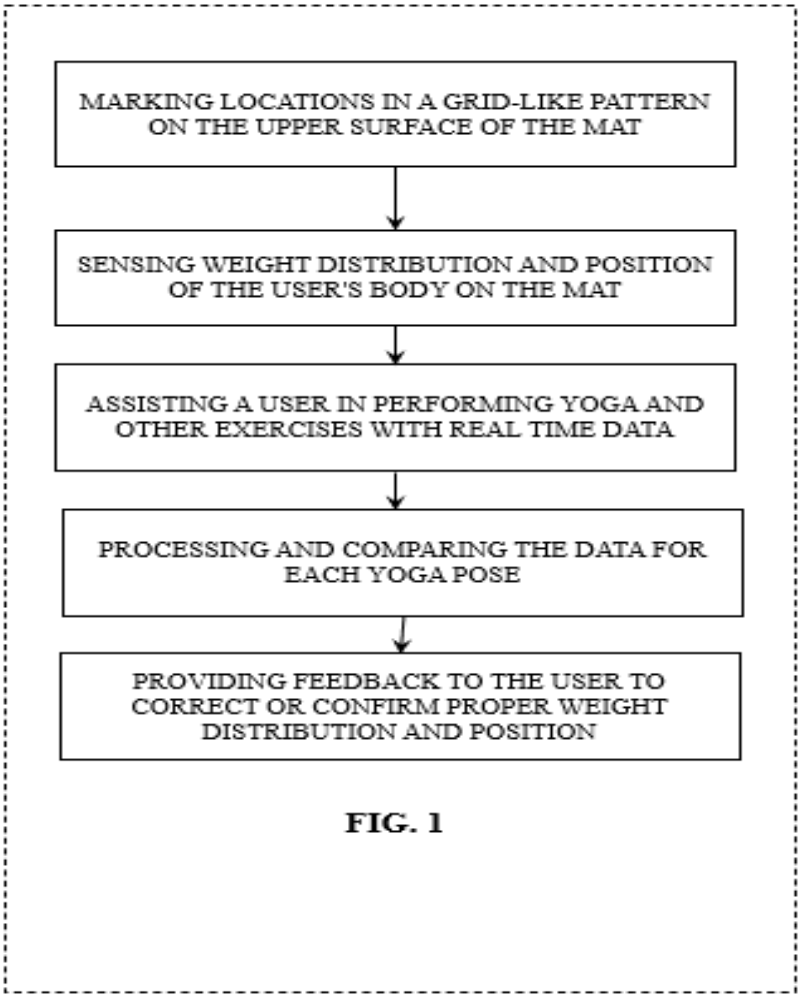


FIG. 1

Somya Kaushik
AGENT FOR THE APPLICANT
IN/PA/5019

FORM 1 THE PATENTS ACT 1970 (39 OF 1970) and THE PATENTS RULES, 2003 **APPLICATION FOR GRANT OF PATENT** (See section 7, 54 and 135 and rule sub rule (1) of rule 20)	(FOR OFFICE USE ONLY)	
	Application No.:	
	Filing Date:	
	Amount of Fee Paid:	
	CBR No:	
	Signature:	

1. **APPLICANT'S REFERENCE / IDENTIFICATION NO. (AS ALLOTED BY THE OFFICE)**	

2. **TYPE OF APPLICATION**

Ordinary (✓)		Convention ( )		PCT – NP ( )	
Divisional ( )	Patent of Addition ( )	Divisional ( )	Patent of Addition ( )	Divisional ( )	Patent of Addition ( )

3 A. APPLICANT(S)

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			Pin Code	603203
Name in Full	Nationality	Country of Residence	Address of the Inventor	
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				Tamilnadu, India
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			State	Tamil Nadu
			Country	India
			Pin Code	603203
Name in Full	Nationality	Country of Residence	Address of the Inventor	
Ms. Dilpreet kaur	Indian	India	House No.	
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			City	Pune
			State	Maharashtra
			Country	India
			Pin Code	
Name in Full	Nationality	Country of Residence	Address of the Inventor	
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			City	Lakhimpur
			State	Assam
			Country	India
			Pin Code	787053
Name in Full	Nationality	Country of Residence	Address of the Inventor	
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			City	Lakhimpur
			State	Assam
			Country	India
			Pin Code	787053
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			Street	Faculty of Sports and Exercise Science, UCLan University of Cyprus, Pyla 7080, Cyprus
			City	Larnaka
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			Country	Cyprus
			Pin Code	7080
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			City	Manouba
			State	Manouba Governorate
			Country	Tunisia
			Pin Code	
Name in Full	Nationality	Country of Residence	Address of the Inventor	
Ajay kumar	Indian	India	House No.	
			Street	Faculty sports physiotherapy
			City	Ambala
			State	Haryana
			Country	India
			Pin Code	

3 B. CATEGORY OF APPLICANT

Natural Person ()	Other than Natural Person		
	Small Entity ( )	Startup ( )	Other (✓)

4. INVENTOR(S)

Are all the inventor(s) same as the applicant(s) named above?	Yes ()	No (✓)

If "No" furnish the details of the inventor(s)

5. TITLE OF THE INVENTION -

"AI BASED YOGA MAT WITH ATTACHABLE MARKERS"

6. AUTHORISED REGISTERED PATENT AGENT(S)	INPA NO.	5019
	Name	Ms. Somya Kaushik

	Mobile No.:	+91 9582649699

7. ADDRESS FOR SERVICE OF APPLICANT IN INDIA	Name	**Elpis Analytix**
	Postal Address	1004/E, Lohiya Gali No. 4, Babarpur, New Delhi
	Telephone No.	NA
	Mobile No.	+91 9582649699
	Fax No.	NA
	Email ID	contact@elpisanalytix.com

8. IN CASE OF APPLICATION CLAIMING PRIORITY OF APPLICATION FILED IN CONVENTION COUNTRY, PARTICULARS OF CONVENTION APPLICATION

Country	Application Number	Filing Date	Name of the Applicant	Title of the Invention	IPC (as classified in the convention country
NA	NA	NA	NA	NA	NA

9. IN CASE OF PCT NATIONAL PHASE, PARTICULARS OF INTERNATIONAL APPLICATION FILED UNDER PATENT CO-OPERATION TREATY (PCT)

International Application Number	International filing date
NA	NA

10. IN CASE OF DIVISIONAL APPLICATION FILED UNDER SECTION 16, PARTICULARS OF ORIGINAL (FIRST) APPLICATION

Original (first) application no.	Date of filing of Original (first) application
NA	NA

11. IN CASE OF PATENT OF ADDITION FILED UNDER SECTION 54, PARTICULARS OF MAIN APPLICATION OR PATENT

Main application/patent no.	Date of filing of main application
NA	NA

12. DECLARATIONS

(i) Declaration by the inventor(s):

I, the above-named inventor is the true & first inventor for this invention and declare that the applicant herein is my assignee or legal representative.

a) Date: 22nd day of February, 2023

1. Signature:  2. Signature: 

Name: Prof. Vasanthi Kadhiravan

Name: Mrs. P. Yoga Lakshmi

3. Signature: 

Name: Dr. S.Saroja

4. Signature: 

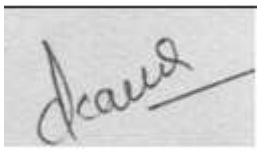
Name: Dr. P.Kumaravelu

5. Signature: 

Name: Karuppasamy Govindasamy

6. Signature: 

Name: Mou Pramanik

7. Signature: 

Name: Ms. Dilpreet kaur

8. Signature: 

Name: Dr HemantajitGogoi

9. Signature: 

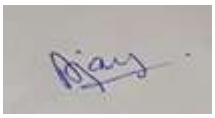
Name: Dr Poli Borah

10. Signature: 

Name: Dr. KoullaParpa

11. Signature: 

Name: Prof. Abderraouf Ben Abderrahman

12. Signature: 

Name: Ajay kumar

(ii) Declaration by the applicant(s) in the convention country

I, the applicant in the convention country declare that the applicant herein is my assignee or legal representative.

a) Date: _____ NA _____

b) Signature: _____ NA _____

c) Name of the signatory: NA

(iii) Declaration by the applicant:

I/We, the applicant(s) hereby declare(s) that:-

[✓] I am in possession of the above mentioned invention.

[✓] The complete specification relating to the invention is filled with this application.

[ ] The invention as disclosed in the specification uses the biological material from India and the necessary permission from the competent authority shall be submitted by me before the grant of patent to me.

[✓] There is no lawful ground of objection to the grant of patent to me.

[ ] I am the true and first Inventor.

[✓] I am the assignee or legal representative of true & first inventor.

[ ] The application or each of the applications, particulars of which are given in Paragraph-8 was the first application in convention country/countries in respect of my invention.

[ ] I claim the priority from the above mentioned application(s) filed in convention country/countries and state that no application for protection in respect of invention had been made in a convention country before that date by me or by any person from which I derive the title.

[ ] My application in India is based on International Application under Patent Cooperation Treaty (PCT) as mentioned in Paragraph-9.

[ ] The application is divided out of my application particulars of which is given in paragraph-10 and pray that this application may be treated as deemed to have been filed on _____under section 16 of the Act.

[ ] The said invention is an improvement in or modification of the invention particulars of which are given in Paragraph-11.

13. FOLLOWING ARE THE ATTACHMENTS WITH THE APPLICATION

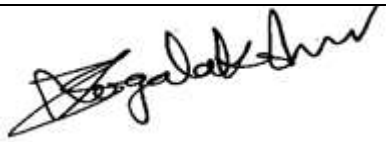
a) Form 2

Item	Details	Fee	Remarks
Complete Specification	No. of Pages: 12	--	--
No. of Claim(s)	No. of Claims: 5 and No. of Pages: 2	--	--
Abstract	No. of Page: 1	--	--
Drawing(s)	No. of Drawings: 1 and No. of Pages: 1	--	--

b) Complete specification (in confirmation with the international application)/as amended before the International Preliminary Examination Authority (IPEA), as applicable,
c) Drawings (in confirmation with the international application)/as amended before the International Preliminary Examination Authority (IPEA), as applicable,
d) Statement and undertaking on Form-3,
e) Declaration of Inventorship on Form-5,
f) Copy of International Application Status Report,
g) Copy of Notification of receipt of record copy (PCT/IB/301),
h) Copy of Notification Concerning Submission or Transmittal of Priority Document (PCT/IB/304),
i) Copy of International Search Report,

Deposit of Total Fee_____1600_____
I hereby declare that to the best of my knowledge, information and belief the facts and matters stated herein are correct and I request that a patent may be granted to me for the said invention.
Dated this: 22nd day of February, 2023

1. Signature: 
Name: Prof. Vasanthi Kadhiravan

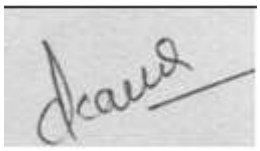
2. Signature: 
Name: Mrs. P. Yoga Lakshmi

3. Signature: 
Name: Dr. S.Saroja

4. Signature: 
Name: Dr. P.Kumaravelu

5. Signature: 
Name: Karuppasamy Govindasamy

6. Signature: 
Name: Mou Pramanik

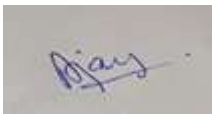
7. Signature: 
Name: Ms. Dilpreet kaur

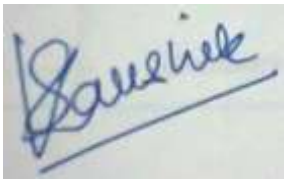
8. Signature: 
Name: Dr HemantajitGogoi

9. Signature: 
Name: Dr Poli Borah

10. Signature: 
Name: Dr. KoullaParpa

11. Signature: 
Name: Prof. Abderraouf Ben Abderrahman

12. Signature: 
Name: Ajay kumar



Somya Kaushik
AGENT FOR THE APPLICANT
IN/PA/5019

To,
The Controller of Patents,
The Patent Office,
at New Delhi

INDIA NON JUDICIAL

Government of Uttar Pradesh

e-Stamp

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LIC No. 76
STAMP VENDOR
892, Tehsil Compound GZB

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Purchased by	:	ELPIS ANALYTIX
Description of Document	:	Article 19 Certificate or other Document
Property Description	:	Not Applicable
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First Party	:	ELPIS ANALYTIX
Second Party	:	Not Applicable
Stamp Duty Paid By	:	ELPIS ANALYTIX
Stamp Duty Amount(Rs.)	:	100 (One Hundred only)

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FORM –26
THE PATENTS ACT, 1970
(39 of 1970)
&
THE PATENTS RULES, 2003
Form for Authorization of a Patent Agent/ or Any Person in a Matter or Proceeding under the Act
(See sections 127 and 132; rule 135)

We, Prof. Vasanthi Kadhiravan, an Indian Citizen having registered address at **Professor & Head , Department of Physical Education, University of Mumbai, Kalina Campus, Santacruz (East), Mumbai – 400098;** Mrs. P. Yoga Lakshmi an Indian Citizen having registered address at **Assistant Professor (Sr.G) Department of Computer Science, College of Science and Humanities, SRM Institute of Science and Technology, Katankulathur 603203**; Dr. S.Saroja an Indian Citizen having registered address at **Associate Professor cum Coordinator, Centre for Yoga Education, Alagappa University, Karaikudi- 630003;** Dr. P.Kumaravelu an Indian Citizen having registered address at **Department of Physical Education, Tamilnadu Physical Education and Sports University, Mellakottaiyur, Chennai-600127;** Karuppasamy Govindasamy an Indian Citizen having registered address at **Doctoral Research Fellow, Department of Physical Education and Sports Sciences, College of Science and Humanities, SRM Institute of Science and Technology, Kattankulathur, Tamil nadu, India;** MouPramanik an Indian Citizen having registered address at **Ph.D Research Scholar, Department of Yoga, College of Science and Humanities, SRM Institute of Science and Technology, Kattankulathur, Tamilnadu, India- 603203;** Ms. Dilpreet kaur an Indian Citizen having registered address at **Assistant Professor &Director Physical Education , suryadatta Group of Institutes , Pune, India;** Dr Hemantajit Gogoi an Indian Citizen having registered address at **Village: TengaAamMajGaon, PO: Ghilamara, Dist: Lakhimpur, PIN: 787053, Assam;** Dr Poli Borah an Indian Citizen having registered address at **Village: TengaAamMajGaon, PO: Ghilamara, Dist: Lakhimpur, PIN: 787053, Assam;** Dr. KoullaParpa a Cyprus Citizen having registered address at **Faculty of Sports and Exercise Science, UCLan University of Cyprus, Pyla 7080, Cyprus**; Prof. Abderraouf Ben Abderrahman a Tunisia Citizen having registered address at **Higher Institute of Sport and Physical Education of Ksar-Said, University of Manouba, Tunisia;** Ajay kumar an Indian Citizen having registered address at **Faculty sports physiotherapy, Ambala, Haryana, India;**;hereby authorise **Ms. Ojeswini Bondalapati** Agent **(IN/PA/2969); Ms. Somya Kaushik (IN/PA/5019)** of **Elpis Analytix**, having their office address at **1004/E, Lohiya Gali No. 4, Babarpur, New Delhi,-110032** to act on our behalf in connection with filling of patent application for the invention under the above mentioned Act in respect of

invention entitled **"AI BASED YOGA MAT WITH ATTACHABLE MARKERS"** and request that all notices, requisitions and communication relating thereto may be sent to such persons at the above address unless otherwise specified.
We hereby revoke all previous authorizations, if any made, in respect of same matter or proceeding.
We hereby assent to the action already taken by the said persons in the above matters.

Dated this 22nd day of February, 2023

1. Signature: 

Name: Prof. Vasanthi Kadhiravan

2. Signature: 

Name: Mrs. P. Yoga Lakshmi

3. Signature: 

Name: Dr. S.Saroja

4. Signature: 

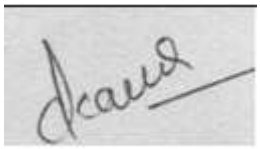
Name: Dr. P.Kumaravelu

5. Signature: 

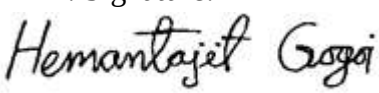
Name: Karuppasamy Govindasamy

6. Signature: 

Name: Mou Pramanik

7. Signature: 

Name: Ms. Dilpreet kaur

8. Signature: 

Name: Dr HemantajitGogoi

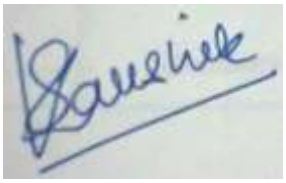
9. Signature: 
Name: Dr Poli Borah

10. Signature: 
Name: Dr. KoullaParpa

11. Signature: 
Name: Prof. Abderraouf Ben Abderrahman

12. Signature: 
Name: Ajay kumar

:



Somya Kaushik
AGENT FOR THE APPLICANT
IN/PA/5019

To,
The Controller of Patents,
The Patent Office,
at Delhi

FORM–9

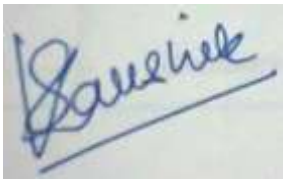
THE PATENTS ACT, 1970
(39 of 1970)
&
THE PATENTS RULES, 2003
Request for Publication
[See Section 11A (2) and Rule 24A]

We, Prof. Vasanthi Kadhiravan, an Indian Citizen having registered address at **Professor & Head , Department of Physical Education, University of Mumbai, Kalina Campus, Santacruz (East), Mumbai – 400098;** Mrs. P. Yoga Lakshmi an Indian Citizen having registered address at **Assistant Professor (Sr.G) Department of Computer Science, College of Science and Humanities, SRM Institute of Science and Technology, Katankulathur 603203**; Dr. S.Saroja an Indian Citizen having registered address at **Associate Professor cum Coordinator, Centre for Yoga Education, Alagappa University, Karaikudi- 630003;** Dr. P.Kumaravelu an Indian Citizen having registered address at **Department of Physical Education, Tamilnadu Physical Education and Sports University, Mellakottaiyur, Chennai-600127;** Karuppasamy Govindasamy an Indian Citizen having registered address at **Doctoral Research Fellow, Department of Physical Education and Sports Sciences, College of Science and Humanities, SRM Institute of Science and Technology, Kattankulathur, Tamil nadu, India;** MouPramanik an Indian Citizen having registered address at **Ph.D Research Scholar, Department of Yoga, College of Science and Humanities, SRM Institute of Science and Technology, Kattankulathur, Tamilnadu, India- 603203;** Ms. Dilpreet kaur an Indian Citizen having registered address at **Assistant Professor &Director Physical Education , suryadatta Group of Institutes , Pune, India;** Dr Hemantajit Gogoi an Indian Citizen having registered address at **Village: TengaAamMajGaon, PO: Ghilamara, Dist: Lakhimpur, PIN: 787053, Assam;** Dr Poli Borah an Indian Citizen having registered address at **Village: TengaAamMajGaon, PO: Ghilamara, Dist: Lakhimpur, PIN: 787053, Assam;** Dr. KoullaParpa a Cyprus Citizen having registered address at **Faculty of Sports and Exercise Science, UCLan University of Cyprus, Pyla 7080, Cyprus**; Prof. Abderraouf Ben Abderrahman a Tunisia Citizen having registered address at **Higher Institute of Sport and Physical Education of Ksar-Said, University of Manouba, Tunisia;** Ajay kumar an Indian Citizen having registered address at **Faculty sports physiotherapy, Ambala, Haryana, India;.,** hereby request for early publication of our Patent Application no.
under section 11A (2) of the Act.

date:

Signature Not Verified
Digitally Signed.
Name: Somya Kaushik
Date: 25-Feb-2023 15:29:01
Reason: Patent Filing
Location: DELHI

Dated this 22nd day of February, 2023



Somya Kaushik
AGENT FOR THE APPLICANT
IN/PA/5019

To,
The Controller of Patents,
The Patent Office,
at Delhi

FORM 3

THE PATENTS ACT, 1970

(39 OF 1970)

&

THE PATENTS RULES, 2003

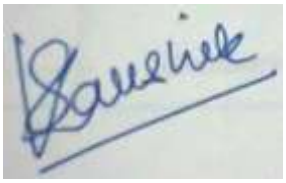
We, Prof. Vasanthi Kadhiravan, an Indian Citizen having registered address at **Professor & Head , Department of Physical Education, University of Mumbai, Kalina Campus, Santacruz (East), Mumbai – 400098;** Mrs. P. Yoga Lakshmi an Indian Citizen having registered address at **Assistant Professor (Sr.G) Department of Computer Science, College of Science and Humanities, SRM Institute of Science and Technology, Katankulathur 603203**; Dr. S.Saroja an Indian Citizen having registered address at **Associate Professor cum Coordinator, Centre for Yoga Education, Alagappa University, Karaikudi- 630003;** Dr. P.Kumaravelu an Indian Citizen having registered address at **Department of Physical Education, Tamilnadu Physical Education and Sports University, Mellakottaiyur, Chennai-600127;** Karuppasamy Govindasamy an Indian Citizen having registered address at **Doctoral Research Fellow, Department of Physical Education and Sports Sciences, College of Science and Humanities, SRM Institute of Science and Technology, Kattankulathur, Tamil nadu, India;** MouPramanik an Indian Citizen having registered address at **Ph.D Research Scholar, Department of Yoga, College of Science and Humanities, SRM Institute of Science and Technology, Kattankulathur, Tamilnadu, India- 603203;** Ms. Dilpreet kaur an Indian Citizen having registered address at **Assistant Professor &Director Physical Education , suryadatta Group of Institutes , Pune, India;** Dr Hemantajit Gogoi an Indian Citizen having registered address at **Village: TengaAamMajGaon, PO: Ghilamara, Dist: Lakhimpur, PIN: 787053, Assam;** Dr Poli Borah an Indian Citizen having registered address at **Village: TengaAamMajGaon, PO: Ghilamara, Dist: Lakhimpur, PIN: 787053, Assam;** Dr. KoullaParpa a Cyprus Citizen having registered address at **Faculty of Sports and Exercise Science, UCLan University of Cyprus, Pyla 7080, Cyprus**; Prof. Abderraouf Ben Abderrahman a Tunisia Citizen having registered address at **Higher Institute of Sport and Physical**

Education of Ksar-Said, University of Manouba, Tunisia; Ajay kumar an Indian Citizen having registered address at **Faculty sports physiotherapy, Ambala, Haryana, India;** .hereby declare

(i) that we who has made the Application #_____, had not made any application for the same/substantially the same invention outside India

(ii) that we undertake that up-to the date of grant of the patent, by the Controller, we would keep him informed in writing the details regarding corresponding applications for the patents filed outside India within three months from the date of filing of such application.

Dated this 22nd day of February, 2023



Somya Kaushik
AGENT FOR THE APPLICANT
IN/PA/5019

To,
The Controller of Patents
The Patent Office,
New Delhi.