"**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
Dr GOWRI SHANKAR M Dr SUNDHAHAR S Ms DHARSHINI A K Ms DIVYA PRASANNA K Ms KOWSIKA P Ms SANDHIYA S Mr SEENIVASAN M Mr LOKESH SURIYA S Mr GOWTHAM P M	INDIAN INDIAN INDIAN INDIAN INDIAN INDIAN INDIAN INDIAN INDIAN	INDIAN INDIAN INDIAN INDIAN INDIAN INDIAN INDIAN INDIAN INDIAN	Department of Electrical and Electronics engineering, Electronics and Instrumentation engineering Electronics and Communication Engineering Bannari Amman Institute of Technology Sathyamangalam, Erode District, Tamil Nadu-638 401

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)	Yes ( )	No ( )

same as the applicant(s) named above?		

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

Name in Full	Nationality	Country of Residence	Address of the Inventor
Dr GOWRI SHANKAR M Dr SUNDHAHAR S Ms DHARSHINI A K Ms DIVYA PRASANNA K Ms KOWSIKA P Ms SANDHIYA S Mr SEENIVASAN M Mr LOKESH SURIYA S Mr GOWTHAM P M	INDIAN INDIAN INDIAN INDIAN INDIAN INDIAN INDIAN INDIAN INDIAN	INDIAN INDIAN INDIAN INDIAN INDIAN INDIAN INDIAN INDIAN INDIAN	Department of Electrical and Electronics engineering, Electronics and Instrumentation engineering Electronics and Communication Engineering Bannari Amman Institute of Technology Sathyamangalam, Erode District, Tamil Nadu-638 401

5. TITLE OF THE INVENTION: A dexterous Static RAM for handheld applications

6. AUTHORISED REGISTERED PATENT AGENT(S)	IN/PA No.	
	Name	
	Mobile No.	
7. ADDRESS FOR SERVICE OF APPLICANT IN INDIA	Name	Dr SUNDHAHAR S
	Postal Address	Bannari Amman Institute of Technology, Sathyamangalam,
	Telephone No.	
	Mobile No.	9841199614
	Fax No.	
	E-mail ID	sudhahars@bitsathy.ac.in

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

(b) Signature(s)

1.
2.
3.
4.
5.
6.
7.
8.
9.

(c) Name(s)

1.
2.
3.
4.
5.
6.
7.
8.
9.

(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 in Paragraph-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		
No. of Claim(s)	No. of claims and No. of pages		
Abstract	No. of pages		
No. of Drawing(s)	No. of drawings and No. of pages		

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……day of…….20……

Signature:

Name:

Dr GOWRI SHANKAR M
Dr SUNDHAHAR S
Ms DHARSHINI A K
Ms DIVYA PRASANNA K
Ms KOWSIKA P
Ms SANDHIYA S
Mr SEENIVASAN M
Mr LOKESH SURIYA S
Mr GOWTHAM P M

To,

The Controller of Patents

The Patent Office, at……..

FORM 2

THE PATENT ACT

1970

(39 of 1970)

The Patents Rules, 2003
PROVISIONAL/COUPLETE
SPECIFICATION
(See section 10 and njt•13)

1. TITLE OF THE **INVENTION** "

2. APPLICANT (S)

(a) NAME: Ms. Dr SUDHAHAR S

(b) NATIONALITY: INDIAN

(c) ADDRESS: Bannari Amman Institute of Technology, Sathyamangalam

3. PREAMBLE TO THE DESCRIPTION

Provisional	COMPLETE
The following specification describes the invention.	The following specification particuiañy describes the invention and the manner in which it is to be performed.

4. **DESCRIPTION** (Description shall start from next page.)

5. CLAIMS (not applicable for provisional specification. Claims should start with the preamble — "I/we claim" on separate page)

6. DATE AND SIGNATURE (to be given at the end of last page of specification)

7. **ABSTRACT** OF TNE INVENTION (lo be given along with complete specification on separate page)

Note: -

*Repeat boxes in case of more than one entry.

"To be signed by the applicant(s) or by authorized registered patent agent. "

Name of the **applicant** should be given in full , **family** name In the beginning .

'Complete address of **the applicant** should be given stating the postal index no./code, ctate and **country.**

'StriJse out the column which Is/are not applicable

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…… …… …… hereby declare:
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……

	…… that I/We undertake that up to 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……day of……..20…..
4. To be signed by the applicant or his authorized registered patent agent.	Signature. …….
5. Name of the natural person who has signed.	(……).
	To The Controller of Patents, The Patent Office, at……
Note.- Strike out whichever is not applicable;	

F O R M 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 APPLICANT (S) Dr SUDHAHAR S

hereby dec are that the true and first inventor(s) o(the invention disclosed in the complete specification filed in pursuance of my /our application numbered dated is/are

2. INVENTOR (S)
(a) NAME Dr SUDHAHAR S
(b) NATIONALITY INDIAN
(c) ADDRESS Bannari Amman Institute of Technology, Sathyamangalam

Dated this .....day of.....20.....

Signature: -
Name of the signatory: -

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

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

Dated this .....day of.....20.....

Signature: -
Name of the signatory: -

4. STATEMENT (to be signed by the additional inventor(s) not mentioned in the application form)

I/We assent to the invention referred to in the above declaration, being included in the complete specification filed in pursuance of the stated application.

Dated this ....,....,.....day of.....20.....

Signature of the additional inventor(s): -

Name: -

To, The Controller of Patent

The Patent Office, at ... ...

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.
"Name of tha inventor and applicant should be given in full, family name in the **beginning** .
"Complete address of the inventor should be given stating the postal index no./code, stete and country.
*Stril‹e out the column **which is/ are not applicable**

TITLE OF INVENTION:

An Innovative Wearable Device Interface for Heart Rate Monitoring using Artificial Intelligence Techniques

FIELD OF INVENTION:

The invention pertains to the field of " An Innovative Wearable Device Interface for Heart Rate Monitoring using Artificial Intelligence Techniques," introducing a ground-breaking approach to health and wellness management. This innovation encompasses a sophisticated system that seamlessly integrates wearable technology with user-friendly interfaces, transforming the way individuals monitor their health. By combining cutting-edge sensors, real-time data analysis, and intuitive user interfaces, this invention empowers users to effortlessly track vital health metrics, providing actionable insights for informed decision-making. The novel wearable device interface not only offers a user-centric experience but also opens new avenues for personalized healthcare, ultimately contributing to improved well-being and proactive health management.

BACKGROUND OF THE INVENTION:

This patent encapsulates a revolutionary wearable interface that not only empowers users to effortlessly monitor their health but also establishes a new standard for user - centred design. Our innovation marries state-of-the-art sensor technology with a sleek, user-friendly

wearable design, redefining how health data is collected, analyzed and presented.

Patent Number US20210290080A1 – “Remote patient management and monitoring systems and methods”. Systems and methods are provided for remote patient management and monitoring. The patient is monitored with a wireless sensor system connected to an application executing on a patient user computing device. The system continuously monitors physiological parameters, such as, but not limited to, blood oxygen saturation (SpO2), pulse rate, perfusion index, pleth variability index, and/or respiration rate from the photo plethysmograph. The system triggers alarms if the patient physiological data violates thresholds. Care providers review patient data and associated alarm(s) with graphical user interfaces.

Patent Number US20190209094A1 – “Health monitoring, surveillance and anomaly detection”. A wearable patch and method for automatically monitoring, screening, and/or reporting events related to one or more health conditions (e.g., sleeping or breathing disorders, physical activity, arrhythmias) of a subject.

Patent Number US10456078B2 – “Wearable device and system for preventative health care for repetitive strain injuries”. A wearable device including a sensor system for Manual Wheelchair Users (MWCUs) to provide an alert to the MWCUs when there is an increased risk of injury is provided. The wearable device includes sensors measuring the physical activity of the MWCU and transmitting

it as user data to a user motion dynamics analysis system on a user device. When the user motion dynamics analysis system determines that there is a risk of injury, it transmits an alert to the wearable device for display to the user.

Patent Number US20170071469A1 – “Method and Device for Patient Monitoring Using Dynamic Multi-Function Device”. The present invention is directed to an improved method, system and product to provide wireless ECG patient monitoring. Although embodiments make specific reference to monitoring electrocardiogram signal with an adherent patch, the system methods, and device herein may be applicable to any application in which physiological monitoring is used. The present invention also presents a reliable means for docking the interface while minimizing signal interference and user error. In addition, a novel means for transmitting and receiving a patient's ECG measurements is introduced which includes the use of an epidermal communication network (ECN) and an ECG enabled module for ECN communications and interface. Although embodiments make specific reference to the use of the ECN for ECG measurements, the system methods, and protocol herein may be applicable to any wearable device and/or other smart device which is ECN enabled.

Patent Number US20170164878A1 – “Wearable Technology for Non-Invasive Glucose Monitoring”. This invention is a wearable device for non-invasive glucose monitoring. It can be embodied in a finger ring, wrist band, wrist watch, or ear-worn device. In an example, it can include a circumferential biosensor array which spans at least

25% of the circumference of the device. A biosensor array can include an array of electromagnetic energy emitters and receivers and/or an array of light emitters and receivers.

THE NOVEL FEATURE OF THIS INVENTION:

The novel feature of the " An Innovative Wearable Device Interface for Heart Rate Monitoring using Artificial Intelligence Techniques" its integration of cutting-edge biometric sensor technology with an elegant and user-centred design. Unlike traditional health monitoring devices, this invention prioritizes user comfort and experience while delivering accurate and insightful health metrics. It introduces a seamless user interface that seamlessly blends into daily life, making health tracking effortless and unobtrusive. By combining advanced sensors with a sleek wearable design, this invention revolutionizes the way health data is collected and presented. It offers a personalized, real-time health monitoring experience, adapting to users' individual needs and preferences. This novel feature addresses the limitations of existing wearables by offering a sophisticated solution that seamlessly integrates health monitoring into the user's lifestyle, ultimately fostering a more proactive approach to wellness.

OBJECT OF THE INVENTION:

- The primary focus is to empower users with actionable insights into their physiological state, enabling them to make informed

decisions about their health. By providing continuous monitoring, personalized feedback, and early warning notifications, the invention seeks to promote preventive healthcare practices and foster a greater sense of ownership over one's well-being.

- Ultimately, the object is to enhance the quality of life and contribute to a healthier and more proactive society through the synergy of wearable technology and health monitoring.

SUMMARY OF THE INVENTION:

The motivation of this project to detect the different kind of diseases in humans in early stages. The heart rate monitoring is popular in recent years, because of the following reasons:

(i) Measurement of physiological parameters

(ii) Portable technology for the primary care and community based clinical settings

(iii) Use of simple, low cost and compact semiconductor devices, and

(iv) Advanced in computer-based pulse wave analysis techniques.

BRIEF DESCRIPTION OF THE DRAWINGS:

Figure 1 illustrates the Block Diagram of the Heart Rate Monitoring using Artificial Intelligence Techniques

Figure 2 represents the Layout of the Heart Rate Monitoring using Artificial Intelligence Techniques

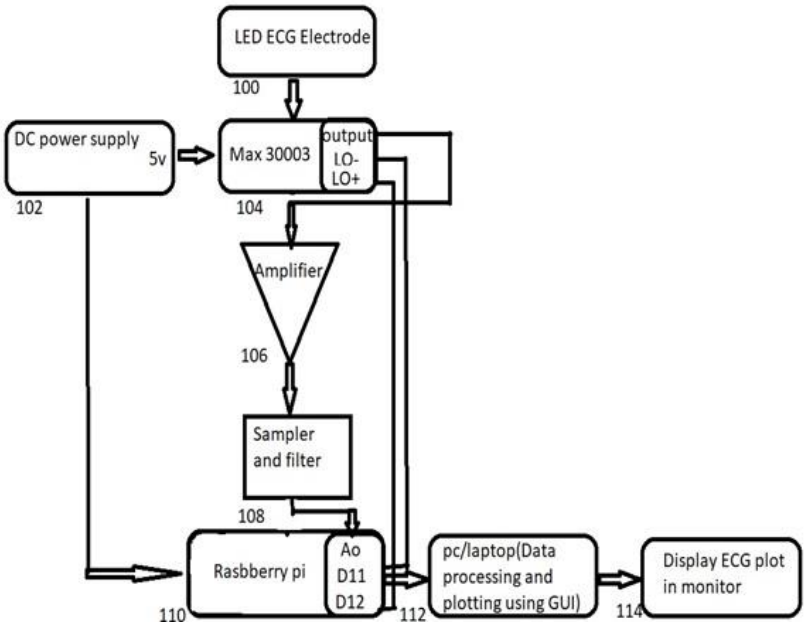

Figure 1 Block Diagram of the Heart Rate Monitoring using Artificial Intelligence Techniques

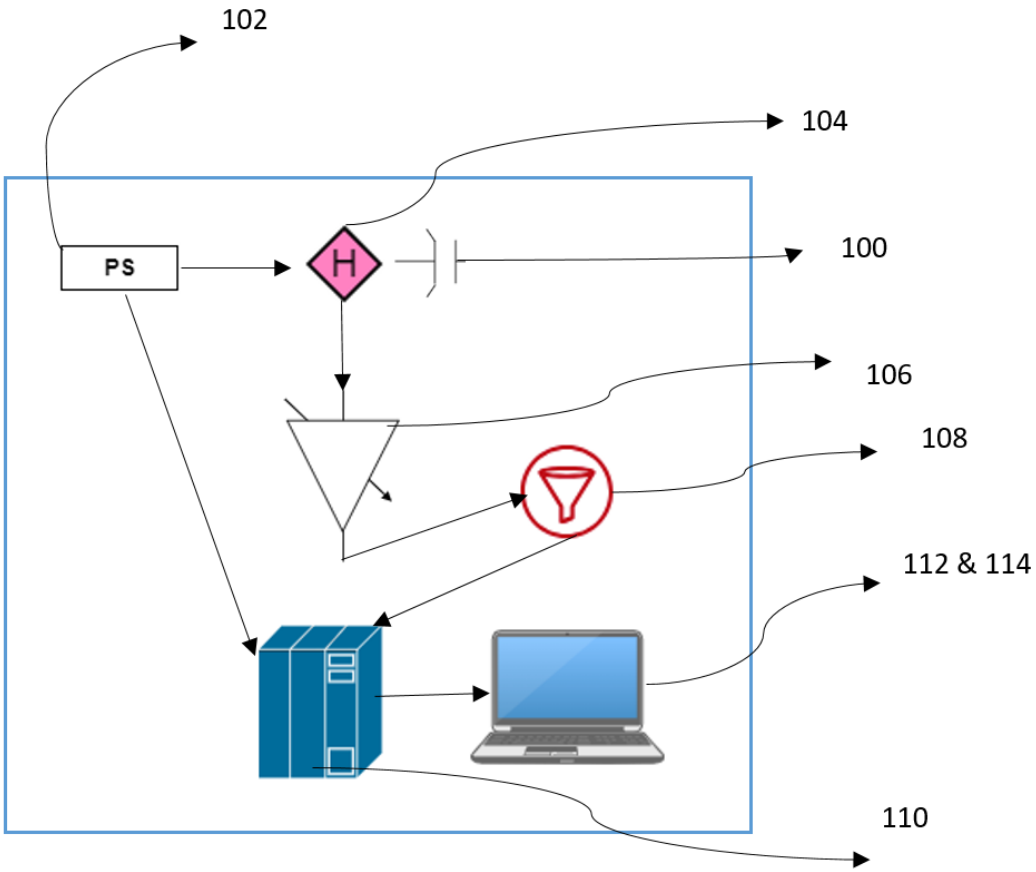

Figure 2 Layout of the Heart Rate Monitoring using Artificial Intelligence Techniques

DETAILED DESCRIPTION OF THE DRAWING:

A sleek and ergonomic enclosure houses the Raspberry Pi, MAX30003 sensor, and other necessary components. This enclosure is designed for user comfort and aesthetics, ensuring it can be worn discreetly throughout the day. **Raspberry Pi (110):** Acting as the central processing unit, the Raspberry Pi manages data collection, processing, and communication with the MAX30003 sensor. Its compact size and computational power make it an ideal choice for wearable technology.

MAX30003 Sensor (104): This sensor is the heart of the wearable device, capable of measuring electrocardiogram (ECG) signals, heart rate, and other physiological data with remarkable precision. Its low power consumption aligns with the device's goal of unobtrusive health monitoring.

DETAILED DESCRIPTION OF THE INVENTION:

The innovation introduces an advanced wearable health monitoring device that leverages the power of the Raspberry Pi (110) platform, the MAX30003 sensor (104), and cutting-edge machine learning techniques to provide a comprehensive health tracking solution. The wearable seamlessly integrates these components to offer real-time insights into an individual's physiological condition, with a primary focus on displaying ECG waveforms on a monitor for immediate observation. The MAX30003 sensor (104), known for its high-precision data acquisition capabilities, is connected to the Raspberry Pi (110) to capture vital health metrics such as ECG signals, heart rate, and respiration rate. The raw data from the MAX30003 sensor (104) is then processed using advanced machine learning algorithms deployed on the Raspberry Pi (110). The machine learning algorithms analyze the ECG data in real-time to identify patterns, anomalies, and potential irregularities in the heart's electrical activity. When irregularities are detected, the wearable device generates alerts, notifying the user of possible health concerns. Additionally, the processed ECG waveforms are displayed on a connected monitor,

mobile app providing users with a visual representation of their heart's activity. This real-time visual feedback empowers individuals to gain insights into their cardiovascular health and make informed decisions about their well-being.

In summary, this novel wearable health monitoring device represents a convergence of hardware and software technologies, seamlessly integrating the Raspberry Pi (110), the MAX30003 sensor (104), and machine learning techniques. By providing real-time ECG waveform display and proactive health alerts, the invention empowers users to take charge of their cardiovascular health and encourages a more informed and health-conscious lifestyle.

TECHNICAL DETAILS:

The experimental protocol for this project is designed and described as follows:

1. Patient should sit down and rest for at least 5 minutes before measurements of heart rate.

2. Cardiac Patient may need to take his/her medication dose depending on the seriousness of his/her condition.

3. Same procedure is repeated for 45 minutes at duration of 10 minutes each if necessary.

The following table indicates the different age peoples heat rate measures

Age	**Heart Rate (BPM)**
	95 Percentage of People
20-29	104
30-39	103
40-49	102
50-59	100
60-69	99
70-79	98
80-89	97

CLAIMS:

We claim,

1) An Innovative Wearable Device Interface for Heart Rate Monitoring using Artificial Intelligence Techniques.

2) Our invention “An Innovative Wearable Device Interface for Heart Rate Monitoring using Artificial Intelligence Techniques” and it will be used effectively for time to time identifying heart rate.

3) As per the claim 1, by using above device the IoT based measurement will be developed.

4) As per claim 2, this device may suitable for applications like Detection of epilepsy and cardiac arrhythmia classification.

ABSTRACT:

This patent introduces a groundbreaking innovation in wearable technology, aimed at revolutionizing the field of health monitoring. The "An Innovative Wearable Device Interface for Heart Rate Monitoring using Artificial Intelligence Techniques" redefines the way individuals track their health by seamlessly integrating cutting-edge biometric sensor technology with an elegant, user-centric design. Unlike conventional health monitoring devices, this invention prioritizes user comfort and experience without compromising on data accuracy. This invention represents a significant leap forward in promoting proactive health management. By presenting health data in a clear and actionable format, it encourages users to adopt healthier lifestyles and respond promptly to any concerning trends. Moreover, the wearable device adapts to individual user needs, providing a tailored health monitoring experience that suits diverse wellness goals. In an era where personal health is paramount, the " An Innovative Wearable Device Interface for Heart Rate Monitoring using Artificial Intelligence Techniques" emerges as a vital tool for individuals seeking to take control of their well-being. This patent marries technology with user-centric design, ushering in a new standard for health monitoring that is accurate, convenient, and empowering.