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| **FORM 2**  **THE PATENTS ACT, 1970**  (39 of 1970)  **&**  **THE PATENTS RULES, 2003**  **PROVISIONAL/COMPLETE SPECIFICATION**  (*See* section 10 and rule 13) | |
| 1. **TITLE OF THE INVENTION: “EDEN FIST”** | |
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| 1. **PREAMBLE TO THE DESCRIPTION** | |
| **PROVISIONAL**  The following features can be included post provisional or prototyping period:-  1. Extraordinarily thin and light glove, enabling sensitivity to the user.  2. Offers exceptional flexibility & mobility for performance.  3.Textured fingers for better grip. | **COMPLETE**  The following specification particularly describes the invention and the manner in which it is to be performed. |
| 1. **DESCRIPTION**   **TITLE OF THE INVENTION: “EDEN FIST”**  **TECHNICAL FIELD OF INVENTION:-**  The affordable smart glove EDEN FIST efficiently identifies the movement of patient’s finger and sends a signal to Arduino which thereby activates buzzer. It will help disabled people like dumb, paralysed and people who are in coma to create an alert for help. Such gloves showcase promising sensory technologies and learning architectures, but various challenges remain. These include scalable and accessible fabrication, and the ability to classify data with small wearable sensor.  **BACKGROUND AND PROBLEM WITH EXISTING ART:-**  Many deaf and dumb people face difficulties such as communication problem, lack of job opportunities,  racism, nepotism etc.. in society because of lack of communication. Communication is the only medium by which we can share our thoughts or convey the message but for a person with disability (deaf and dumb) faces difficulty in communication with normal person. Because of this, a person who lacks in hearing and speaking ability is not able to stand in race with normal person.  **SUMMARY OF THE INVENTION:-**  The noble aim behind this project is to design a health care smart glove which will be helpful for paralyzed and mute people as well as for the detection of heart attack. A Dumb individual all through the world uses gesture based communication for the correspondence. The progression in implanted framework can give a space to plan and build up an interpreter framework to change over the communication via gestures into discourse. As sign language primarily used by deaf but also used by people who can hear having problem in speaking so the approach used in this analysis is vision based. The glove uses are fitted with flex sensor. Heart attack is the major reason for death among both genders men and women. However, its occurrence cannot be always predictable. Most common device used to detect heart related problems is an EKG machine which is reliable to normal user, but is not mobile enough to be used as a monitoring device for a heart patient continuously. This project is to develop an algorithm for detecting a heart attack and if so, then to alert doctors, family members and emergency services . Hence here we introduce a smart health care system which will take care of problems and need of paralyzed and mute people and will also help in detection of heart attack by tracking oxygen level and pulse rate. So, this product will help to create a revolution in society for the disabled people.  **LIST OF PREFERRED AND OPTIONAL FEATURES**  **Glove components :**  **1.Glove**  **2. Flex Sensor 2.2 inch bend sensor for hand recognition.**  **3. Jumper wire**  **4.Arduino Nano**  **5.9V Battery**  **6.Small Piezoelectric Buzzer-5V**  **7.2 pin switch**  **8.10K ohm 2 watt Resistor**  **9.9V Battery Snap Connector**    **Oximeter components :**  **1.Arduino Pro Mini 5V**  **2.0.91 inch OLED display**  **3.5mm LED - red color light**  **4.BC547 Transistor**  **5.Photodiode – 5mm IR Receiver LED**  **6.4.7 omh,1/4 Watt – Resistor**  **7.9V battery Snap connector**  **8.Hair Clutcher**  **9.9V Battery**  **BRIEF DESCRIPTION OF THE DRAWING**  Figure 1: Circuit Diagram of Glove    Figure 2: Circuit Diagram of Oximeter      **DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS**  Once the patient moves his finger, the flex sensor will sense the movement of finger. It will pass signal to Arduino. Arduino will convert the signal to binary command which will further be passed to buzzer to buzz. When any movement is sensed by the flex sensor it will buzz. Basically Oximeter calculates the percentage oxygen saturation in the blood on basis of amount of different light absorbed in it. Oximeter has One photodiode and two LEDs, one is Red LED & another one is InfraRed LED, both LEDs are switched one by one on a certain frequency. To take measurements, fingertip is placed in between of photodiode and LEDs. Oxygenated blood absorbs more Infrared Light and passthrough the more red light and Deoxygenated blood absorb more red light and passthrough the more InfraRed Light. Processor calculates the ratio of red light received at photodiode and Infrared light at the different time interval. The oximeters can also build by using Arduino Sensor which is specially designed for measuring pulse and oxygen saturation in blood. It's not that critical to make pulse oximeter using it, since It combines two LEDs, a photodetector, optimized optics, low-noise Analog signal processing to detect pulse oximetry and heart-rate signals. and I2C interface. But I thought to make one oximeter with it's basic components used in sensor i.e. 2 LEDs and Photodetector. I took a general purpose Photo Diode and grind it using grinder to make it flat and thin so that it can receives max light from the source, originally it is in round shape and dark colour, these two factors block the more visible light and this is not good for our project, since we are using red visible light as well as the invisible Infrared light. Similarly I grinded a red LED and a Infrared LED from one side, and combined them using super glue. Took a hair claw clip and put Photo Diode at one side of it and combined LEDs at another side of it as shown in the picture. After this I connected all the components as shown in the circuit diagram. I didn't used PCB here since there are very few components, so I solder them just around the Arduino board and fix them using hot glue. to power this oximeter I using the 9Volt battery. | |
| **5. CLAIMS**   * It is affordable as the components required are very few and is user friendly. * This reduces the communication gap faced by the disabled. * It also provides communication between dumb blind. * It is also useful for speech impaired and Paralyzed patient. * Its light weight and flexible to users. * Easy to operate and real time translation. * High buzzer sound. * Accurate oxygen rate reading. * Easy/comfortable to wear. | |
| **6. DATE AND SIGNATURE**   1. **Date: 01.09.2020** 2. **Signature(s)**      1. **Name(s): Dr. Karmel A Dr. Umamaheswari E Dr. Kanimozhi .G**     **Dr. Kanchana Devi V Dr. David Maxim Gururaj Dr. Krishnaveni S**    **Name : Adwaita Jha-21MIS1186 Vaishnavi Shukla – 21MIS1100**    **Raj Koyani-21MIS1017** | |
| 7. **ABSTRACT OF THE INVENTION**  Around 10.32% people have vision related disabilities, 8.36% people have hearing related disabilities, 5.06% people have speech impairment, 23.04% people have locomotor disabilities, 41.32% people have other physical disabilities ,11.54% people are having overlapping problem.Communication is the only medium by which we can share our thoughts or convey the message but for a person with disability (paralysed or dumb or just recovered from coma) faces difficulty in communication with normal person. Because of this, a person who lacks in speaking ability is not able to stand in race with normal person. So there is a barrier in communication between these two communities. This work aims to lower this barrier in communication The main aim of the proposed project is to develop a cost effective system which can give voice to voiceless person with the help of Smart Gloves. It means that using smart gloves communication will not be barrier between two different communities. With the help of these gloves disabled person can also get chance to grow in their respective carrier. Using such devices by disabled person also makes nation grow. The noble aim behind this project is to design a health care smart glove which will behelpful for paralyzed and mute people as well as for the detection of heart attack. A Dumb individual all through the world uses gesture based communication for the correspondence. The progression in implanted framework can give a space to plan and build up an interpreter framework to change over the communication via gestures into discourse. As sign language primarily used by deaf but also used by people who can hear having problem in speaking so the approach used in this analysis is vision based. The glove uses are fitted with flex. Heart attack is the major reason fordeath among both genders men and women. However, its occurrence cannot be always predictable. Most common device used to detect heart related problems is an EKG machine which is reliable to normal user, but is not mobile enough to be used as a monitoring device for a heart patient continuously. This project is to develop an algorithm for detecting a heart attack and if so, then to alert doctors, family membersand emergency services . Hence here we introduce a smart health care system which will take care of problems and need of paralyzed and mute people and will also help in detection of heart attack by tracking oxygen level and pulse rate.  . | |