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Authenticated Data Recovery Of A Brain Dead Patient Using IOT

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Abstract—With advances in high throughput brain imaging at cellular and subcellular level, there is growing demand for platforms that can support high performance, large scale brain data processing and analysis. Hence, authenticated data from brain research is accelerating the development of inexpensive real time Brain-Computer Interface(BCI). In this paper, we present the cloud based system for performing brain connectivity analysis. The main purpose of this project is to authenticate the data which has been stored in the cloud page and to send the data via email or message to the corresponding authorized person, when intended. The main findings of this project highlights three major development trends of Brain Computer Interface (BCI): Eeg, IoT, Cloud Computing.

This is useful for finding the true state of the brain whether it is alive or dead. If the brain is alive, then the activity of brain is monitored & stored. And if any changes in the status of the brain, then it will send to the specific person in their relation using message or email. Since, the model is based on the IOT , it requires both hardware and software impoverments. Hardware analysis is to visualize the brain status. Accordingly, log sheet provides specification about the transmission of data and the brain activity too

***Keywords*—** Hardware analysis, hardware and software, authenticated data, Computer Interface etc.

I. INTRODUCTION

A. OVERVIEW OF NSIC

Considering the significance of small scale industries in the economic development in 1953 the Government of India invited an International planning team of experts to visit the country and study the problems confronting the Small Scale Sector in the country. One of the recommendations of the team was the constitution of an autonomous corporation with the regional offices for serving SSIs in obtaining a fair proportion of Government Contracts. As a result, Government of India in order to promote small and budding entrepreneurs of the post independent India decided to establish a government agency which can mediate and provide help to SSIs. The agency so created came to be known as,

―The National Small Industries Corporation Ltd. (NSIC)‖. It was established by the Government of India in February 1955 with seed money of `.20 lakhs, which was entirely subscribed by the Government of India. Now the NSIC has grown up many folds.

The Corporation occupies a unique position among the Institutions set up to aid SSIs. NSIC has been working to fulfil its mission of promoting, aiding and fostering the growth of small scale industries, now commonly known micro, small and medium enterprises – MSMEs in the country. Over a period of five decades of transition, growth and development, NSIC has proved its strength within the country and abroad by promoting modernization, up-gradation of technology, quality consciousness, strengthening linkages with large medium enterprises and enhancing exports - projects and products from the small and medium enterprises.

MISSION:

―To promote and support Micro, small & Medium Enterprises (MSMEs)Sector‖ by providing integrated support services encompassing Marketing, Technology, Finance and other services.

VISION:

―To be a premier Organization fostering the growth of Micro, small and Medium Enterprises (MSMEs) Sector‖.

B. OPERATIONS:

The National Small Industries Corporation Ltd. (NSIC), is an ISO 9001-2015 certified Government of India Enterprise under Ministry of Micro, Small and Medium Enterprises (MSME).

NSIC operates through countrywide network of offices and technical centres in the country. To manage operations in African countries, NSIC operates from its office in Johannesburg , south Africa .

NSIC has recently partnered with Rubique.com, to facilitate lending for MSME segment. Rubique &NSIC will work together to create an interface which will ease credit facilitation for MSMEs by allowing quicker decision making and evaluation and to widen the product offerings will bring their respective bank/FI tie-ups under one umbrella for MSME.

C. OBJECTIVES:

The NSIC was started with initial objectives of: a) supplying imported and indigenous machines and equipment to the SSIs on easy instalment basis; b) encouraging the SSIs in internal and export marketing of their products, c) assisting the SSIs in getting a fair share of government purchase by participating in the central government purchase programme;

d) imparting training to the skilled workmen and technicians; e) developing proto-types and the latest technology based, machine tools and equipment and transfer of technical knowhow for the production of such machines on commercial basis; and f)testing and common servicing facilities to SSIs.

With the enactment of the MSMED Act, 2006, medium enterprises also came into its ambit. Later, the NSIC too extended objectives of providing complete MSMEs entrepreneurial solutions in line with its strategic objectives, for which the Corporation amended its mission to include the following ―to aid, counsel, assist, finance, protect and promote the interest of small industries in India.‖

D. SCHEME OF NSIC:

To enhance the competitiveness of MSMEs, the NSIC provides integrated support services in the areas of Marketing, Technology, Finance, etc. It is implementing various schemes which include Marketing Assistance and Performance & Credit Rating on behalf of the M/o MSME.

In addition, NSIC has set up Training cum Incubation Centre. With a large professional manpower, it provides a package of services as per the needs of MSME sector. It carries forward its mission to assist small enterprises with a set of specially tailored schemes designed to put them in a competitive and advantageous position. The schemes comprise of facilitating marketing support, credit support, technology support and other support services. It operates through countrywide network of offices and Technical Centres.

E. SINGLE POINT REGISTERATION FOR GOVERNMENT PURCHASE:

NSIC operates a Single Point Registration Scheme under the Government Purchase Programme, wherein the registered small enterprises get purchase preference in Government Purchase Programme. The small enterprises registered under this Scheme get the following facilities:-

i. Issue of tenders free of cost.

ii. Advance intimation of tenders issued by DGS&D.

iii. Exemption from payment of the earnest money deposit.

iv. Waiver of security deposit up to the monetary limit for which the enterprise is registered; and

v. Issue of competency certificate after due verification, in case the value of an order exceeds the monetary limit.

F. TECHNOLOGY SUPPORT:

Technology is the key to enhancing a company's competitive advantage in today's dynamic information age. MSMEs need to develop and implement a technology strategy in addition to financial, marketing and operational strategies and adopt the one that helps to integrate their operations with their environment, customers and suppliers. NSIC offers MSMEs the following support services through its Technical Services Centres and Extension Centres:

(i)Material testing facilities through accredited laboratories.

(ii) Product design including CAD.

(iii) Common facility support in machining, EDM, CNC, etc.

(iv) Energy and environment services at selected Centres .

G.SERVICES OF NSIC:

- Bank Credit Facilitation
- Raw Material Assistance
- Single Point Registration
- Infomediary Services
- NSIC Consortia and Tender Marketing Scheme
- Bill Discounting

H.AWARDS AND RECOGNITIONS:

As a result of its consistent good performance the GOI has accorded "Mini Ratna" status (Category – II) to NSIC. It is first of its kind in the history of MSME Sector. The Mini Ratna‖ status gives NSIC a higher degree of autonomy to provide greater services through its innovative schemes for the growth and development of MSME sector in the country.

In recognition of the services rendered by the NSIC for the development of MSMEs, it was awarded India Pride Award, 2013. NSIC received "Icon of the year Award" from the Institute of Cost and Works Accountants of India (ICWAI). The award was conferred on the NSIC by the Institute in recognition of the services in implementing various innovative schemes for the promotion and development of MSME sector in the country.

Hon'ble Chief Minister of Delhi conferred "Meri Dilli Award" to NSIC in recognition of the innovative NSIC Incubation programme for Small Enterprise establishment launched by NSIC for creating new employment opportunities, employment and the growth of MSME sector in the country. NSIC received the

„Small Business Mentor of the Year‟ at the National Convention for Small Business & Entrepreneurship organized by Zee TV and Indian Franchise Association held in Mumbai.

"India Pride Awards 2011 & 2013 ": CMD, NSIC was awarded Gold Medal at the India Pride Awards, 2011 (a Dainik Bhaskar initiative) for excellence in creating impact in the Indian Economy and Society from Shri Montek Singh Ahluwalia, Deputy Chairman, Planning Commission. "Award of Excellence": An award of Excellence was conferred on NSIC for its role in the direction of promoting, developing and financing of MSMEs in the country. Council of Arab League, an organization of Arab States in North and Northeast Africa and Southwest Asia (Middle East) comprising of 22 countries conferred "Council of Arab league Award" on CMD, NSIC in recognition of his outstanding contribution in the field of MSME sector in the region especially for his innovative Rapid Incubation Program for creation of self-employment opportunity which has been found very useful in many countries of Africa.

I. INTRODUCTION

1) PROBLEM STATEMENT:

With advances in high throughput brain data at the cellular and sub cellular level, there is growing demands for platforms that can support high, large scale brain data processing & analysis. To address these challenges, BRAIN-IOT enable smart autonomous behavior in Internet of Things with some sensors and cloud. In addition, Brain IOT provides a set of components that guarantee the security & privacy protection of the data during transmission.

2) OVERVIEW:

Brain IoT is a technology which includes mechanism to enforce privacy & enable interoperable operations and exchange of data & control features between members. It also aims at establishing a framework &methodology that supports smart autonomous & co-operative behavior of the IoT platforms. In order to secure the data in a private manner, it is necessary to store it in the safest place. This is achieved by using brain-IoT concept where the data is secured & send after the death of the person to their successor.

II. LITERATURE SURVEY:

The IOT is the model of connecting a device to the Internet & also to other devices. Many of the works have been carried to increase the data security and privacy with the functions of physical IOT.

About 90%of tested devices collected from the recent survey conducted by HP says that atleast one bit of information is stolen from the personal information. This will lead to lack of security, confidentiality and integrity of the data.

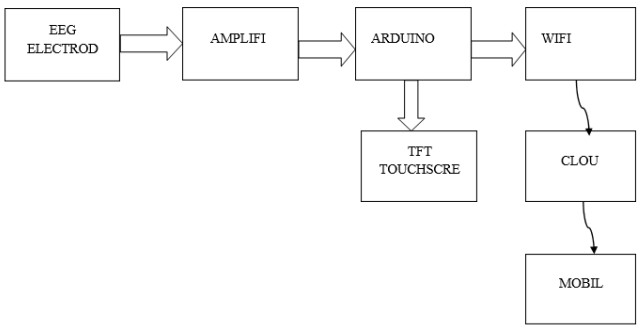
As per the survey concluded, there are four segments related to IOT:

- Deals with the limitations of IOT device.
- Classific the attack.
- Deals with data authentication.
- Related to issue involved in data security.

In order to enhance the data security and confidentiality, this project is carried out.

III. PROPOSED WORK:

A. BLOCKDIAGRAM:

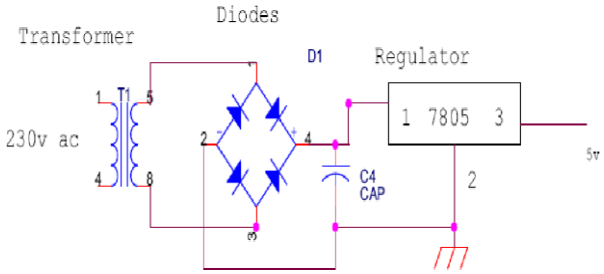


B. REQUIREMENT SPECIFICATIONS:

HARDWARE:

1) Arduino Uno
2) EEG Sensor
3) TFT Touchscreen
4) IoT Module SOFTWARE:
1) Arduino Uno IDE

1) POWER SUPPLY:



A power supply is an electrical device that supplies electric power to an electrical load. The primary function of a power supply is to convert electric current from a source to the correct voltage, current, and frequency to power the load. As a result, power supplies are sometimes referred to as electric power converters. Some power supplies are separate standalone pieces of equipment, while others are built into the load appliances that they power.

Examples of the latter include power supplies found in desktop computers and consumer electronics devices. Other functions that power supplies may perform include limiting the current drawn by the load to safe levels, shutting off the current in the event of an electrical fault, power conditioning to prevent electronic noise or voltage surges on the input from reaching the load, power-factor correction, and storing energy so it can continue to power the load in the event of a temporary interruption in the source power.

All power supplies have a power input connection, which receives energy in the form of electric current from a source, and one or more power output connections that delivered to the load.

Power supply unit consists of following units:

1) Step down transformer
2) Rectifier unit
3) Filter
4) Regulator unit

a) STEPDOWN TRANSFORMER:

The Step down Transformer is used to step down the main supply voltage from 230V AC to lower value. This 230 AC voltage cannot be used directly, thus it is stepped down. The Transformer consists of primary and secondary coils. To reduce or step down the voltage, the transformer is designed to contain less number of turns in its secondary core. The output from the secondary coil is also AC waveform. Thus the conversion from AC to DC is essential. This conversion is

achieved by using the Rectifier Circuit/Unit.

Step down transformers can step down incoming voltage, which enables you to have the correct voltage input for your electrical needs. For example, if our equipment has been specified for input voltage of 12 volts, and the main power supply is 230 volts, we will need a step down transformer, which decreases the incoming electrical voltage to be compatible with your 12volt equipment.

b) RECTIFIER UNIT:

The Rectifier circuit is used to convert the AC voltage into its corresponding DC voltage. The most important and simple device used in Rectifier circuit is the diode. The simple function of the diode is to conduct when forward biased and not to conduct in reverse bias. Now we are using three types of rectifiers. They are

1. Half-wave rectifier
2. Full-wave rectifier
3. Bridge rectifier

c) Bridge rectifier:

A bridge rectifier makes use of four diodes in a bridge arrangement to achieve full-wave rectification. This is a widely used configuration, both with individual diodes wired as shown and with single component bridges where the diode bridge is wired internally.

A diode bridge or bridge rectifier is an arrangement of four diodes in a bridge configuration that provides the same polarity of output voltage for either polarity of input voltage. When used in its most common application, for conversion of alternating current (AC) input into direct current (DC) output, it is known as a bridge rectifier. A bridge rectifier provides full-wave rectification from a two-wire AC input, resulting in lower cost and weight as compared to a center-tapped transformer design.

d) FILTER:

Capacitors are used as filter. The ripples from the DC voltage are removed and pure DC voltage is obtained. And also these capacitors are used to reduce the harmonics of the input voltage. The primary action performed by capacitor is charging and discharging. It charges in positive half cycle of the AC voltage and it will discharge in negative half cycle. So it allows only AC voltage and does not allow the DC voltage. This filter is fixed before the regulator. Thus the output is free from ripples.

There are two types of filters. They are

1. Low pass filter
2. High pass filter

e) Low pass filter:

One simple electrical circuit that will serve as a low-pass filter consists of a resistor in series with a load, and a capacitor in parallel with the load. The capacitor exhibits reactance, and blocks low-frequency signals, causing them to go through the load instead. At higher frequencies the reactance drops, and the capacitor effectively functions as a short circuit. combination of resistance and capacitance gives you the time constant of the filter $\tau = RC$ (represented by the Greek letter tau). The break frequency, also called the turnover frequency or cutoff frequency (in hertz), is determined by the time constant.

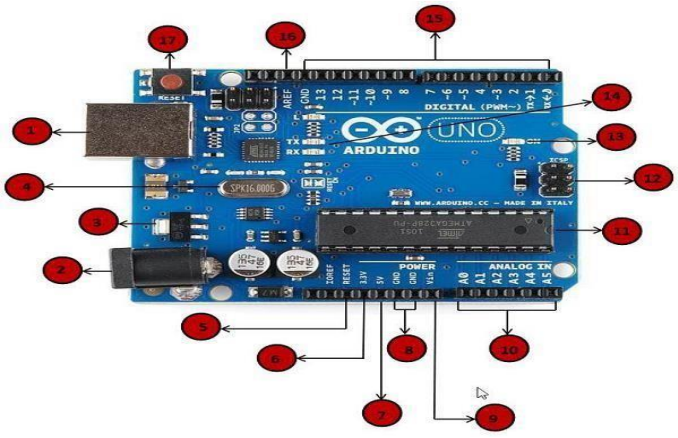
One to understand this circuit is to focus on the time the capacitor takes to charge. It takes time to charge or discharge the capacitor through that resistor:

- At low frequencies, there is plenty of time for the capacitor to charge up to practically the same voltage as the input voltage.
- At high frequencies, the capacitor only has time to charge up a small amount before the input switches direction. The output goes up and down only a small fraction of the amount the input goes up and down. At double the frequency, there's only time for it to charge up half the amount.

Another way to understand this circuit is with the idea of reactance at a particular frequency:

- Since DC cannot flow through the capacitor, DC input must "flow out" the path marked V out (analogous to removing the capacitor).
- Since AC flows very well through the capacitor — almost as well as it flows through solid wire — AC input "flows out" through the capacitor, effectively short circuiting to ground (analogous to replacing the capacitor with just a wire).

It should be noted that the capacitor is not an "on/off" object (like the block or pass fluidic explanation above). The capacitor will variably act between these two extremes. It is the Bode plot and frequency response that show this variability.



f) REGULATOR UNIT

7805 Regulator

Regulator regulates the output voltage to be always constant. The output voltage is maintained irrespective of the

fluctuations in the input AC voltage. As and then the AC voltage changes, the DC voltage also changes. Thus to avoid this Regulators are used. Also when the internal resistance of the power supply is greater than 30 ohms, the output gets affected. Thus this can be successfully reduced here. The regulators are mainly classified for low voltage and for high voltage. Further they can also be classified as:

i) Positive regulator 1---> input pin
2---> ground pin
3---> output pin
It regulates the positive voltage.
ii) Negative regulator 1---> ground pin 2---> input pin
3---> output pin
It regulates the negative voltage.

(1) FIXED REGULATORS:

An assortment of 78xx series ICs

"Fixed" three-terminal linear regulators are commonly available to generate fixed voltages of plus 3 V, and plus or minus 5 V, 9 V, 12 V, or 15 V when the load is less than about 7 amperes.

(2) 7805 VOLTAGE REGULATOR:

The 7805 provides circuit designers with an easy way to regulate DC voltages to 5v. Encapsulated in a single chip/package (IC), the 7805 is a positive voltage DC regulator that has only 3 terminals. They are: Input voltage, Ground, Output Voltage.

2) EEG SENSORS:

EEG sensor has the work to measure the electrical activities which is generated by the synchronized activity of multiple neurons in volts which results in turn gives outstanding resolution in terms of time, which makes us to find the activity within the limit of different divisions of cortical areas even at sub-second timescales. EEG, the fastest imaging techniques available has high sample rate. Firstly when discovered many years ago EEG was plotted on paper. Nowadays in current systems, it digitally displays the data as a continuous flow of voltages on scenarios which we want.

a) EEG SIGNAL:

EEG signal which is calculated in terms of intensity and frequency. Signal intensity is measured in microvolts (μV). Signal frequency of the human. EEG waves are of four types and they are theta, delta, alpha and beta.

Signal frequency types:

Delta-3Hz or below(meaditation and dreamlesssleep) Theta - 3.5 or 7.5Hz(learning, memory and intuition)

Alpha – 7.5 to 13Hz (mental co ordination ,calmness , alertness)

Beta – 14 and greater than 14 Hz (problem solving, decision making and judgement).

3) ARDUINO:

Arduino is a prototype platform (open-source) based on an easy-to-use hardware and software. It consists of a circuit board, which can be programed (referred to as a microcontroller) and a ready-made software called Arduino IDE (Integrated Development Environment), which is used to write and upload the computer code to the physical board.

a) KEY FEATURES:

- Arduino boards are able to read analog or digital input signals from different sensors and turn it into an output such as activating a motor, turning LED ON/OFF, connect to the cloud and many other actions.
- Unlike most previous programmable circuit boards, Arduino does not need an extra piece of hardware in order to load a new code onto the board.

b) CIRCUITBOARD:

1) Power USB (1):

Arduino board can be powered by using the USB cable from your computer. All you need to do is connect the USB cable to the USB connection (1).

2) Power (Barrel Jack) (2):

Arduino boards can be powered directly from the AC mains power supply by connecting it to the Barrel Jack (2).

3) Voltage Regulator (3):

The function of the voltage regulator is to control the voltage given to the Arduino board band stabilize the DC voltages used by the processor and other elements.

4) Crystal Oscillator (4):

The crystal oscillator helps Arduino in dealing with time issues. How does Arduino calculate time? The answer is, by using the crystal oscillator. The number printed on top of the Arduino crystal is 16.000H9H. It tells us that the frequency is 16,000,000 Hertz or 16 MHz.

5) Arduino Reset (5,17):

You can reset your Arduino board, i.e., start your program from the beginning. You can reset the UNO board in two ways. First, by using the reset button (17) on the board.

Second, you can connect an external reset button to the Arduino pin labelled RESET (5).

6) Pins (3.3, 5, GND, Vin) (6,7,8,9):

3.3V (6): Supply 3.3 output volt

5V (7): Supply 5 output volt

Most of the components used with Arduino board works fine with 3.3 volt and 5volt.

GND (8) (Ground): There are several GND pins on the Arduino, any of which can be used to ground your circuit.

Vin (9): This pin also can be used to power the Arduino board from an external power source, like AC mains power supply.

7) Analog pins (10):

The Arduino UNO board has five analog input pins A0

through A5. These pins can read the signal from an analog sensor like the humidity sensor or temperature sensor and convert it into a digital value that can be read by the microprocessor.

8) Main microcontroller (11):

Each Arduino board has its own microcontroller (11). You can assume it as the brain of your board. The main IC (integrated circuit) on the Arduino is slightly different from board to board. The microcontrollers are usually of the ATMEL Company. You must know what IC your board has before loading up a new program from the Arduino IDE. This information is available on the top of the IC. For more details about the IC construction and functions , you can refer to the data sheet.

9) ICSP pin (12):

Mostly, ICSP (12) is an AVR, a tiny programming header for the Arduino consisting of MOSI, MISO, SCK, RESET, VCC, and GND. It is often referred to as an SPI (Serial Peripheral Interface), which could be considered as an "expansion" of the output. Actually, you are slaving the output device to the master of the SPI bus.

10) Power LED indicator (13):

This LED should light up when you plug your Arduino into a power source to indicate that your board is powered up correctly. If this light does not turn on, then there is something wrong with the connection.

11) TX and RX LEDs (14):

On your board, you will find two labels: TX (transmit) and RX (receive). They appear in two places on the Arduino UNO board. First, at the digital pins 0 and 1, to indicate the pins responsible for serial communication. Second, the TX and RX led (13). The TX led flashes with different speed while sending the serial data. The speed of flashing depends on the baud rate used by the board. RX flashes during the receiving process.

12) Digital I / O (15):

The Arduino UNO board has 14 digital I/O pins (15) (of which 6 provide PWM (Pulse Width Modulation) output. These pins can be configured to work as input

digital pins to read logic values (0 or 1) or as digital output pins to drive different modules like relays, etc. The pins labeled —~‖ can be used to generate PWM.

13) AREF (16):

AREF stands for Analog Reference. It is sometimes, used to set an external reference voltage (between 0 and 5 Volts) as the upper limit for the analog input pins.

4) TFT LCD MODULE:

A 2.4” TFT LCD module consists of a bright backlight (4 white LEDs) and a 240X320 pixels display. It also features individual RGB pixel control giving a much better resolution than the black and white displays. A resistive touch screen comes pre-installed with the module as a bonus and hence you can easily detect your finger presses anywhere on the screen.

a) TFT LCD module Pinout:

A thin-flim-transistor liquid crystal (TFT LCD) is a variant of a liquid-crystal display(LCD) that uses thin-film transistor (TFT) technology to improve image qualities such as addressability and contrast. A TFT LCD is an active matrix LCD, in contrast to passive matrix LCDs or simple, direct-driven LCDs with a few segments.

TFT LCDs are used in appliances including television sets, computer monitors, mobile phones, handheld devices, video game systems, personal digital assistants, navigation systems, projectors, and car instrument clusters.

The circuit layout process of a TFT LCD is very similar to that of semiconductor products. However, rather than fabricating the transistors from silicon, that is formed into a crystalline silicon wafer, they are made from a thin film of amorpous silicon that is deposited on a glass panel. The silicon layer for TFT-LCDs is typically deposited using the PECVD process. Transistors take up only a small fraction of the area of each pixel and the rest of the silicon film is etched away to allow light to easily pass through it.

Polycrystalline silicon is sometimes used in displays requiring higher TFT performance. Examples include small high resolution displays such as those found in projectors overview finders. Amorpous silicon-based TFTs are by far the most common, due to their lower production cost, whereas polycrystalline silicon TFTs are more costly and much more difficult to produce.

(1) SPI Mode Pinout:

This mode is generally used when speed is not the priority. It is very easy to port to different microcontrollers. In SPI mode, micro SD card socket can be used on the same SPI bus. It sends one bit at a time, hence it is slower than the 8-bit mode which sends all the bits in parallel.

(2) 8-bit Mode

This mode requires a lot of pins (around 12) but provides a lot of speed because it sends 8-bits at a time

PIN

Name Description

GND Power and signal Ground pin

Vin(3.5V) Power pin that can be connected to 3-5VDC. It comes with reverse polarity protection.

CS 8-bit TFT chip select pin which is also tied to SPI mode CS pin.

C/D TFT 8-bit data or command selector pin. It is not similar to the SPI D/C pin. However, it is similar to SPI CLK pin.

WR TFT 8-bit write strobe pin which is also connected to SPI D/C pin.

RD It is read strobe pin for 8-bit TFT. It is used only in the case when a user needs to read from the display.

RST The TFT comes with an auto-reset circuit which gets active on every breakout. However, a user can reset the module using this pin also, in case setup is not resetting clean.

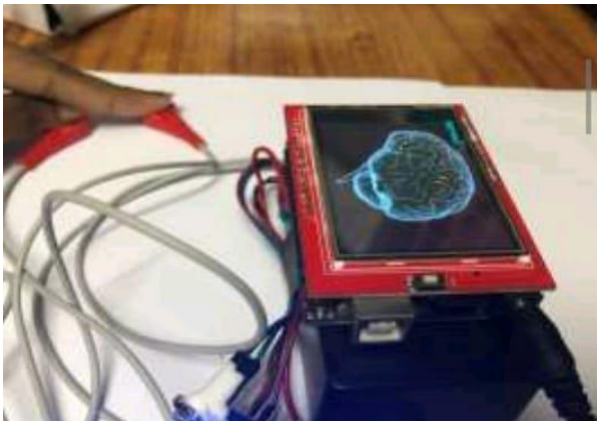
Lite It is similar to SPI Lite pin.

D0 – D7 These pins are used to send the 8-bit parallel data. D0 is the least significant bit while D7 is the most significant one.

b) TFT OUTPUT:

a) Device with output (NORMAL).

b) Device with output (BRAIN DEAD).



5) WIFI MODULE:

ESP8266-wifi module, self-contained SOC (system on chip) /integrated circuits (ie), chip with connection to the TCP/IP protocol stack that can give any different microcontroller access to other wi-fi network. The microcontroller which we are using in this project is ARDUINO. The ESP8266suits whether for hosting an application or offloading all wifi networking functions from processor of other applications. This modules comes with AT commands firmware allows Arduino wi-fi shield. It's completely fast growing community support in economy. This module has on-board 80MHz low power 32bit processor and supports Bluetooth co-existence interface; it contains special feature of self-calibrated RF which works under all operating conditions. And also it has APSD - (Automatic Power Save Delivery) with power saving mechanism. A thing in the internet of things can be a person with a heart monitor implant, a farm animal with a biochip transponder, an automobile that has built-in sensors to alert the driver when tire pressure is low -- or any other natural or man-made object that can be assigned an IP address and provided with the ability to transfer data over a network. Luminsense Wi-Fi IoT board designed to meet a variety of online application needs with distinct advantages that enable the embedded system designer to easily, quickly and seamlessly add internet connectivity to their applications.

The module's UART update feature and webpage control make them perfect for online wireless applications such as biomedical monitoring, environmental sensors, and datas from portable battery operated wireless sensor network devices.

Luminsense IoT board featured with inbuilt Configured Node Mcu to activate internet connection with dedicated cloud webpage also to process all input UART data to Wi-Fi based online data.

(1) AUTO INTERNET CONNECTION FACILITY:

SSID: iotdata PASSWORD: 12345678.

(2) FEATURES:

1) UART TTL/RS232 upload facility.
2) Four reley can directly connect and control device option output pins.
3) Four digital input pins.
4) One analog sensor auto upload option.
5) LCD display connection facility.
6) 12V/5V DC voltage input facility.

6) ARDUINO SOFTWARE (IDE):

The Arduino Integrated Development Environment - or Arduino Software (IDE) - contains a text editor for writing code, a message area, a text console, a toolbar with buttons for common functions and a series of menus. It connects to the Arduino and Genuino hardware to upload programs and communicate with them. Programs written using Arduino Software (IDE) are called sketches.

These sketches are written in the text editor and are saved with the file extension

This is across-platform application (for Windows, macOS, Linux) that is written in the programming language Java and is used to write and upload programs to Arduino compatible

boards, and also with the help of 3rd party cores, other vendor development boards. The source code for the IDE is released under the GNU General Public License, version. The Arduino IDE supports the languages C and C++ using some special conditions with rules of code structuring.

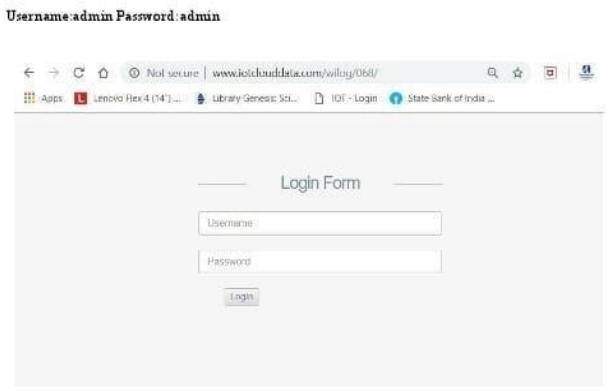
7) CLOUD:

Cloud computing is the on-demand availability of computer system resources, especially data storage and computing power, without direct active management by the user. The term is generally used to describe data centers available to many users over the internet. Large clouds, predominant today, often have functions distributed over multiple locations from central servers. If the connection to the user is relatively close, it may be designated an edge server.

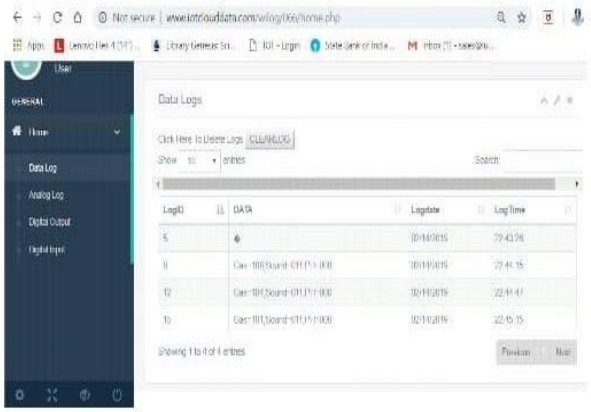
Cloud storage is a model of computer data storage in which the digital data is stored in logical pools. The physical storage spans multiple servers (sometimes in multiple locations) and the physical environment is typically owned the managed by a hosting company. These cloud storage provides are responsible for keeping the data available and accessible, and the physical environment protected and running. People and organizations buy or lease storage capacity from the providers to store user, organizations or application data.

Storage availability and data protection is intrinsic to object storage architecture, so depending on the application, the additional technology, effort and cost to add availability and protection can be eliminated. In our project, we use http://www.iotclouddata.com/dbrain/011/home/php website by using SSID password we made log in into the website in order to see the status of brain in the brain log sheet and to send the data to the respective person which is already stored in the cloud.

a) SAMPLE CLOUD LOG PAGE:



b) BRAIN STATUS LOG SHEET:

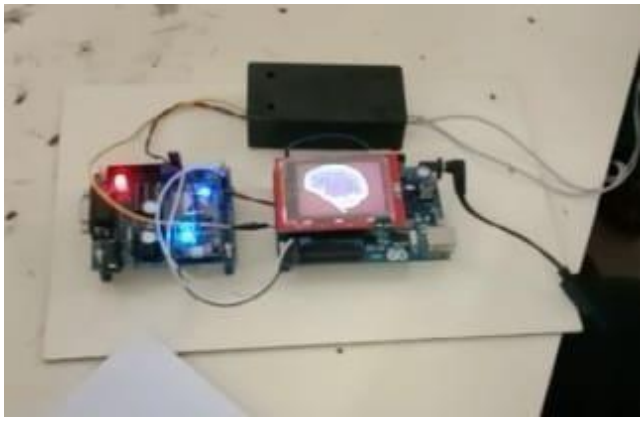


IV. IMPLEMENTATION AND RESULT:

A. IMPLEMENTATION:

Here, firstly the EEG headset with sensor is connected to the microprocessor ARDUINO board and it is connected to the ESP8266 which is interconnected to the TFT touchscreen. Firstly the EEG headset sensors the EEG signal from the brain with the electrodes present in the headset and it checks whether it is alive or dead. After sensing, if the result comes it is normal, and then it will be displayed on the touch screen. If we want in software application ,then we check the status of the brain in ARDUINO IDE using the cable connected to hardware kit and the device is to be installed into the system/laptop in which Arduino software has been installed. In tools menu, present in the Arduino application, click on the port which is enabled and after that we can directly see the status of the brain in the monitor. If any modification or update is noticed then the status will be sent through SMS and email id for specific person in contact.

B. OUTPUT DIAGRAM:



C. RESULTS AND DISCUSSION:

This project is intended to increase the data security and transmission of the data in an efficient way. Hence after

finding the status of the brain that is if not alive, then the image will be displayed and the data is transmitted.

V.CONCLUSION & FUTURE ENHANCEMENT:

A. CONCLUSION:

In this paper, we described a cloud-based system for performing large-scale brain connectivity analysis. We demonstrated that our approach can achieve fast data query and extraction for analytics and visualization.

B. ENHANCEMENT:

There are many avenues for future work. First, we would like to enhance the web GUI by making it more interactive and user friendly.

Further, we intend to scale up to process much larger datasets (terabytes and above) with the goal of one day being able to perform such analysis on the human brain. We are also exploring the use of a polystore database such as Big DAWG as a data. Here we are using logid for every user, through that they are accessing their data.

In future, thumb impression for every user can be added instead of logid. With this log id, misuse of data is possible. And this great kit can be converted into a chip and can insert either internally or externally. And also, every person can use this in day to day life and can definitely escape from accidental health issues and also from forgeries being done without the particular person's.

VI. REFERENCES:

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[3] N.R. Raajan, G.N.Jayabhavani (2007) : A smart way to play using Brain Machine Interfacing