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A Virtual Cloud Based Brain Connectivity Analysis Using IoT

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A VIRTUAL CLOUD BASED BRAIN CONNECTIVITY ANALYSIS USING IoT(INTERNET OF THINGS)

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Abstract: Virtual cerebrum look is quickening the advancement of modest continuous Brain Computer Interface (BCI). Equipment enhancements that expansion the capacity of Virtual mind examine and Brain Computer wearable sensors have made conceivable a few new programming systems for designers to utilize and make applications joining BCI (Brain computer interface) and IoT (Internet of Things). Right now, complete study on BCI in IoT from different points of view; including Electroencephalogram (EEG) based BCI models, and current dynamic stages. In view of examinations, the principle discoveries of this overview features three significant advancement patterns of BCI, which are EEG, IoT, and distributed computing. ***In this project, the main aim is to upload secure and confidential documents onto the cloud. Virtual cerebrum undertaking will scan for bits of knowledge into how individuals think and recall. Using this EEG (*****Electroencephalogram) sensor can easily find the true state of the brain. I.e. whether the brain is alive or not. In the event that it is alive, at that point the activity of the cerebrum is checked and put away. Through this anyone can reach resolution that whether the action done is lawful or illicit. After the death of the brain, the secured and confidential documents data which stored in the cloud can automatically send to the registered user's mail I'd and phone number.**

Keywords: EEG sensor; AVR Microcontroller; UART (universal asynchronous receiver transmitter); IoT Modem; BCI (Brain Computer-Interface).

1. INTRODUCTION

In the ongoing years, expanding number of Internet of Thing (IoT) items and administrations are as a rule generally conveyed in all expert and mass-showcase utilization situations including keen structure .The hopeful figures released in a years ago about incomes and of sent de-indecencies, exhibited the estimation of IoT arrangements in genuine scale operational conditions. In addition, business and pilot deployments are logically showing the importance of IoT stages in complex utilization situations. What is **Brain Iot**? Brain IoT centers around complex situations where activation and control are helpfully upheld by populaces of IoT frameworks. Let's discuss about the components of the project. Here the components used are EEG, AVR Microcontroller, UART and Iot Modem**. 1. EEG (Electroenceplogram)** is used to sense the brain., whether the brain active or not. **2. AVR Microcontroller** is used for utilizing the fast sign handling activity inside an implanted framework., this microcontroller has already all features and built into a single chip.**3.UART (Universal Asynchronous Receiver Transmitter)** is used for transmitting and receiving the information and its being connected with the Iot. 4.BCI(Brain computer Interface) As the above named itself explained it is the connection of Human Brain and computer. Few are intended for high throughput thick and long-extend neuron investigation at the phone level, which is basic for understanding cerebrum circuits and for contrasting solid and unhealthy minds. High throughput and low dormancy investigation of mind information will require fast databases and programming interfaces agreeable to enormous scope diagram examination.

2. LITERATURE SURVEY

[1] , N. M. Neihart and R. R. Harrison "Micro power circuits for bidirectional wireless telemetry in neural recording applications," IEEE Internet Computing, vol. 19, no. 4, pp. 60–67, 2018. This paper has explain about the Best in class neural chronicle frameworks require gadgets taking into account transcutaneous, bidirectional information move. As these circuits will be embedded close to the cerebrum, they should be little and low force. Utilizing a parasitic radio wire under 2 mm long, a got power level was estimated to be - 59.73 dBm a ways off of one

meter.

[2] R. Polana R. Nelson, “Detecting Activities interface in Neural engineering”, Springer, 2018, pp. 85–121. This paper explains about BCI frameworks measure explicit highlights of mind action and make an interpretation of them into control flags that drive a yield. The sensors modalities that have most normally been utilized in BCI contemplate have been electroencephalographic (EEG) chronicles from the scalp and single-neuron accounts from inside the cortex.

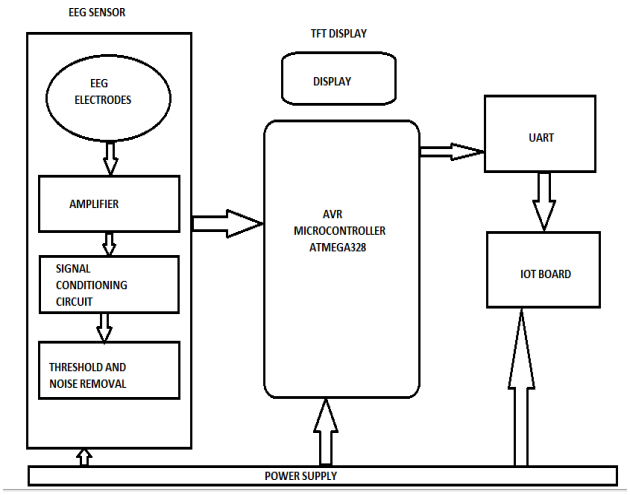
[3] B. Gosselin, “Using brain-computer interface and internet of things to improve healthcare for wheelchair users.” 2017. This paper has introduce a method called BTC communication. BTC frameworks give another option correspondence channel to perform activities and detecting in brilliant articles by means of orders sent by clients from their controlled mind excerices.

4] L. H. Miranda and T. H. Meng, “A programmable pulse UWB transmitter with 34% energy efficiency for multichannel neuro recording systems,” Applications and Services (Healthcom), 2017 IEEE 19th International Conference on. IEEE, 2017, pp. 1–5. This paper describes about configurable, 3.6 to 7.5 GHz beat UWB transmitter IC focused for neurological inserts with high information rate prerequisites. Each pattern of the RF beat is carefully programmable in plentifulness and span, empowering a truly adaptable forming of the transmitted PSD signal, without the utilization of a yield channel.

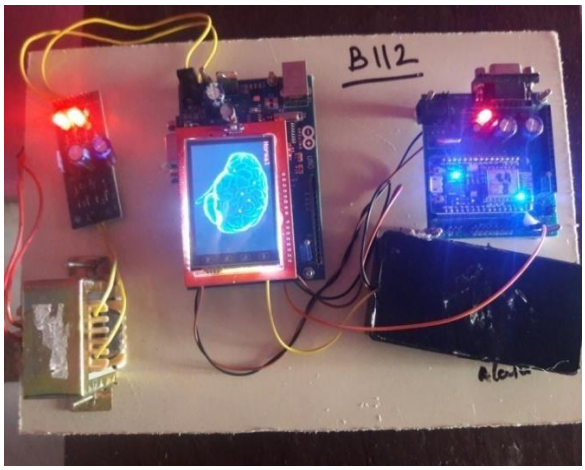
[5] Y. Gaoet al, “Low-power ultrawideband wireless telemetry transceiver for medical sensor applications ,” Applications and Services (Healthcom), 2017 IEEE 19th International Conference on. IEEE, 20176, pp. 1–5. This paper describes about the Gait period analysis serves to determine the frequency and phase of each observed sequence so as to align sequences before matching. In this paper introduce a method called CMOS. A coordinated CMOS ultra wideband remote telemetry handset for wearable and implantable clinical sensor applications is accounted for right now. This high obligation cycled, no coherent handset underpins adaptable information rate up to 10 Mb/s with vitality effectiveness of 0.35 no/bit and 6.2 no/bit for transmitter and recipient, separately.

3. PROPOSED APPROACH

In this paper, implement the BCI (Brain computer interface) approach. The below diagram is the demonstration of the project. The components used in this project are EEG, AVR Microcontroller, Iot Modem, UART wire and power supply is enabled. The main usage of this AVR microcontroller is to provide high speed signal processing. The AVR Microcontroller is connected with EEG sensor and Iot modem. The transformer is used in this experiment since the 240v can be converted into 5v. Transformer is connected with AVR Microcontroller. Above the Microcontroller TFT (Thin Film Transmitter) display is used. It is used for display purpose. Let’s discuss about the experimentation of the project. When the power supply is getting ON, have to hold the EEG sensor on the side of forehead and touch with hands. When it holds it results as Brain active else the brain is not active. So in that TFT display it show as Brain dead.

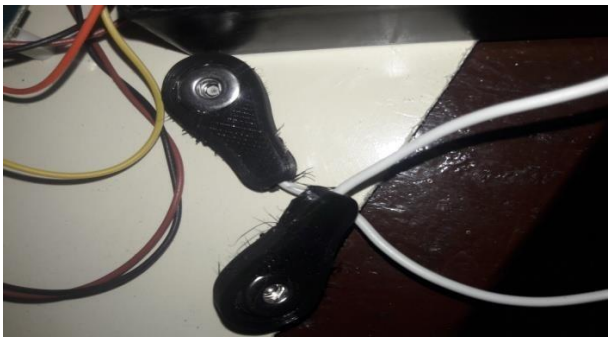


SYSTEM ARCHITECTURE



DEMONSTRATION OF THE PROJECT

In future this experiment is act without power supply. As of this project is more enhanced with wearable device. We can wear this at forehead.



EEG SENSOR

3.1 REQUIREMENTS.

In this project both Hardware and Software requirements are used. The Hardware requirements used are:

- EEG (ElectroEnceplogram) sensor.
- AVR Microcontroller.
- UART(Universal Asynchronous Receiver Transmitter).
- IoT Modem.
- TFT (Thin Film Transmitter) Display.

The software requirements used here is:

- PHP code.

3.2 Cloud computing

Cloud computing implies putting away and getting to information and projects over the Internet rather than your PC's hard drive. It is the combination of both hardware and software. As this explained in this project also we can combine the device and internet. Let's Detailly explained about the software side.

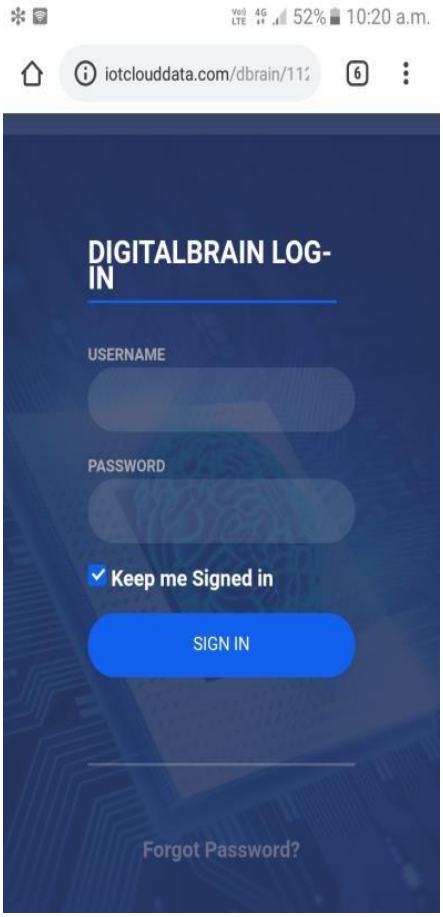


Fig 3.2.1: Login page

The above snap is the login of the Digital brain. It consists of user name and login.

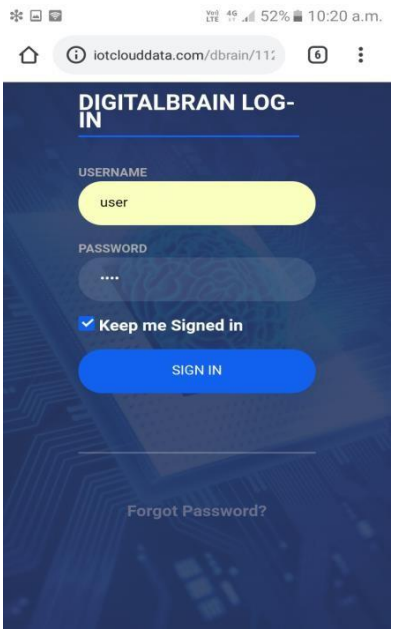


Fig 3.2.2: Sign in.

As per the rules, we can enter the username and password. So that it sign up and get into the next page. By using PHP code, these websites and pages can be designed. Since it is a cloud computing it is made-up of username and password and it cannot be accessed by Third party. We can securely make up the design and website while coding.

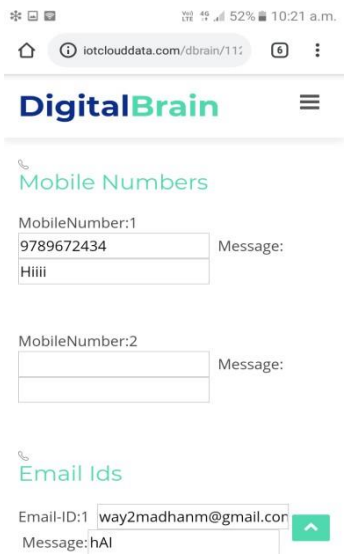


Fig 3.2.3: upload of Documents.

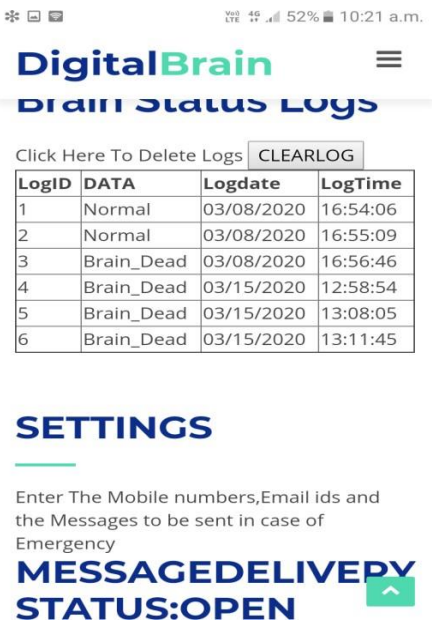


Fig 3.2.4: Brain status log

Fig 3.2.5: upload of document through Mail id.

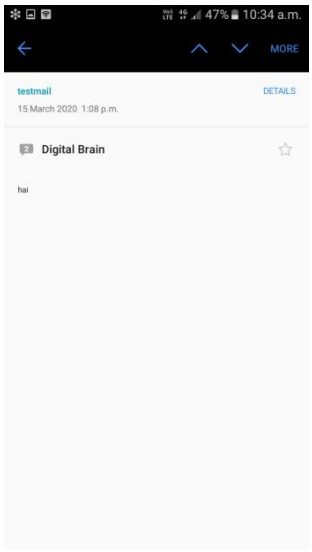


Fig 3.2.6 Message received by the user.

The above 3.2.6 snap clearly explains that once the brain is not active, it automatically send to the registered user.

4. CONCLUSION

In this paper, we clearly explain about the digital brain and computer interface. Also we introduce the method called BCI (Brain computer interface)model. Actually this experiment or project establishes and publishes the human memories and documents which stored in the cloud are automatically sent to the registered user even the authorized person is no more. After the death of the human brain, this cloud act has the human. This project is mainly designed for all kinds of people. More strictly Amnesia patients will be used. In future it will be developed without power supply and also instead of login can use finger print. Because every time by typo of username and password this finger print makes useful and necessary for people. It can be used in day to day life. It cannot cause so much of harm to the people.

5. REFERENCES

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[5] Y. Gaoet al, “Low-power ultrawideband wireless telemetry transceiver for medical sensor applications ,” Applications and Services (Healthcom), 2017 IEEE 19th International Conference on. IEEE, 20176, pp. 1–5.

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