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Password System That are Mind Control

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Abstract-- *One-day system authentication could be widely achieved through brainwaves. One doesn't need toremember that 8 or more character long strange password. Simply thinking of certain things, such as a personface, or a rotating displayed cube, or line of song would be enough to unlock a device. Electro-encephalography(EEC) sensors are behind the technique. That is where electrical activity in certain parts of the brain is recorded.These sensors are used to generate the graphical lines on charts created from wired electrodes placed on the scalp,as seen in hospitals and TV shows. They are used in hospital to diagnose epilepsy, among other things. In this case,though, one wouldn't need to be fitted with wired electrodes —or even a headset, which is used already in somecurrent non-muscular EEC computer controls. An ear bud will collect the signals (mental gesture) and performsecure authentication. This research could provide hands-free and wireless interaction, authentication, and user experience, all in the form-factor of a typical ear bud.*

Keywords: E*ar bud, Electro-encephalography (EEC), hands-free and wireless interaction, mental gesture, secureauthentication.*

I. INTRODUCTION

Our brain is composed of neurons. The number of neurons is approximately billion in number[1]. These number of neurons are interconnected each other via trillions of synapses. Neurons communicate using electrical signals called neurotransmitters that either stimulate or inhibit the activity of a responding neuron[2]. These electrical signals are possible to record using a monitoring method which is known as Electroencephalography (EEG). Today, with the help of neurosciences and computer technology, it has become possible to create a communication between a human brain and a computer. This process is known as Brain Computer Interface(BCI). By using BCI (Brain Computer Interface), we developed a system, which can help to control password security. this paper represents mind controlled password system, which is based on Brain-computer, interfaces (BCI). BCIs are systems that provide direct communication and control between the human brain and physical devices.System worked by translating different patterns of brain activity into commands in real time. The brain wave sensor will sense brain signals and it will convert data into packets and transmit through Bluetooth. Then the control command will have transmitted to the relay circuit.

II. FROM PASSWORDS TO PASSTHOUGHTS

A password or a fingerprint or an iris scan—these are the ways to verify that we are who we say we are, allowing us to log in to our devices or enter a high security area. But if we want to move beyond touch screens and keyboards, our methods of authentication will have to change too. That has pushed an idea to find new ways to verify our identities, and to do it directly from the source: the brain.

When we perform mental tasks like picturing a shape or singing a song in our heads, our brains generate the unique neuronal electrical signals. A billion people could mentally hum the same song and no two brain-wave patterns generated by that task would be alike.

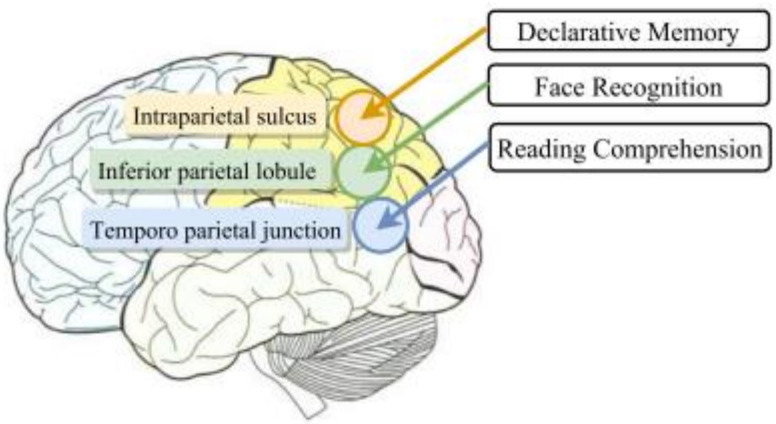
An electroencephalograph (EEG) will read those brain waves using non-invasive electrodes that record the signals. This unique patterns can be used like a password or biometric identification. Base on theidea some have developed devices that they say are 100 percent accurate. But those efforts have involved placing electrodes on the forehead or conspicuously across the scalp.

Some have also developed in-ear EEG sensors that read brain waves for the purposes of controlling a computer or monitoring sleep. But til recently, those groups hadn't tried to optimize in-ear EEGs for use as passthought readers.John Chuang and his colleagues at the University of California at Berkeley develop a passthought reader integrated into an everyday set of earbuds. His group built the device using a consumer-grade single-electrode EEG headset called the NeuroSkyMindwave, which sells for about US $100 online. The electrodes are intended to be placed on the forehead. his group simply took it out of its casing and fitted it for the ear. They then ran a small study to see how reliably it will read brain waves.

The rudimentary device was surprisingly accurate. Twelve volunteers performed two sets of five mental tasks; the earpiece correctly confirmed their identities 72 to 80 percent time. These results suggest that a single electrode integrated into set of earbuds could be used as method of authentication. No hands required. His team had previously done authentication testing with the NeuroSky electrode placed where its designers intended—on the forehead—and found that it was accurate more than 99 percent of the time. So they knew it worked. Getting it to work in the ear may be a matter of finding optimal location or fitting it appropriately in ear.That's the next logical step to making a practical, real-world device. Clearly a lot more work needs to be done for this to be effective and useful in the real world.

Another challenge is making a device that is accurate even when the wearer's physiological and mental states change. You could hum same tune you've hummed a thousand times, but stress, mood, alcohol, caffeine, medicine, and mental fatigue could change electrical signals that are generated.Chuang and his 16-year-old son, Gabriel Chuang, found that to be true in a study of exercise and passthoughts. As a science project for school, the father-son pair tested passthoughts system on 10 volunteers by giving them each a mental task before and after exercise. They found that it took up to 60 seconds for brain signals to return to normal after just 1 minute of jumping jacks.

The signals right after exercise are completely different from baseline[4].



III. METHODOLOGY

To analyze EEG signals, we use a device named as Neurosky Mind Wave mobile. It has two dry sensors which helpsin detecting and filtering the EEG signals. one sensor is placed on forehead which is FP1. This sensor picks up ambient noise which is generated by human muscle. The second sensor, ear clip which is used ground and reference. This sensor allows the thinker chip to filter the electrical noise. This is recorded electrical activities of brain and transmitted through Bluetooth. The device measures the raw signal, power spectrum (alpha, beta, gamma, theta), on head detection, attention level, mediation level and blink detection[3]. Neurosky Mind Wave mobile has pre-built algorithms which are attention, meditation, Blink Detection etc. In this paper, we used attention level and on head detection. This attention level indicates the intensity of mental "focus" or "attention." Its value ranges from 0 to 100. The attention level increases when user focus on a single thought or an external object and decreases when distracted. FP1 position of scalp A brain computer interface (BCI) is a direct communication pathway between the brain and an external device. It is also called mind-machine interface (MMI), direct neural interface (DNI), or brainmachine interface(BMI). It is a communication system for controlling a device, e.g. computer, wheelchair or neuro-prosthesis, by human intensions, which does not depend on brain's normal output pathways of peripheral nerves and muscles but relies on detectable signals representing responsive or intentional brain activities[5].

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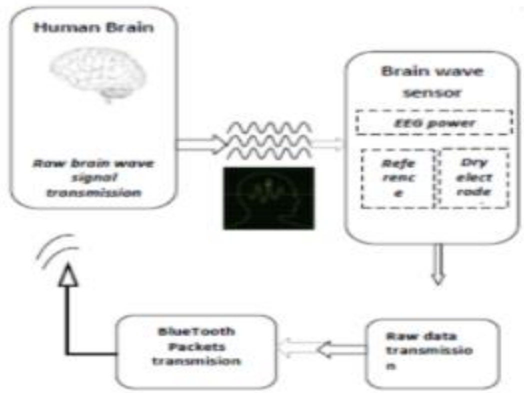
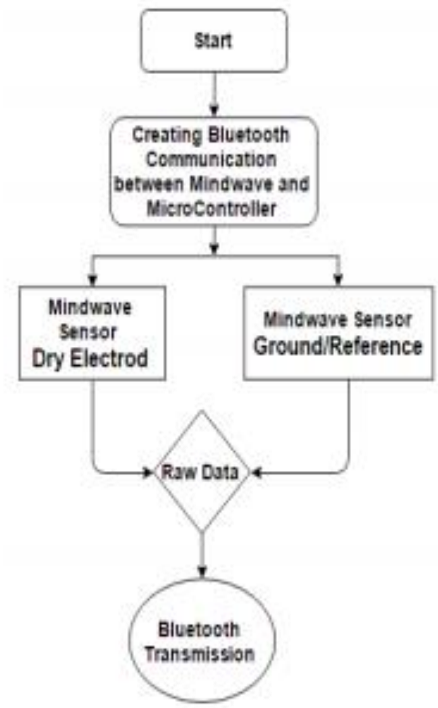


Fig-3: BCI (Brain Computer Interface)

IV. WORKING PROCEDURE



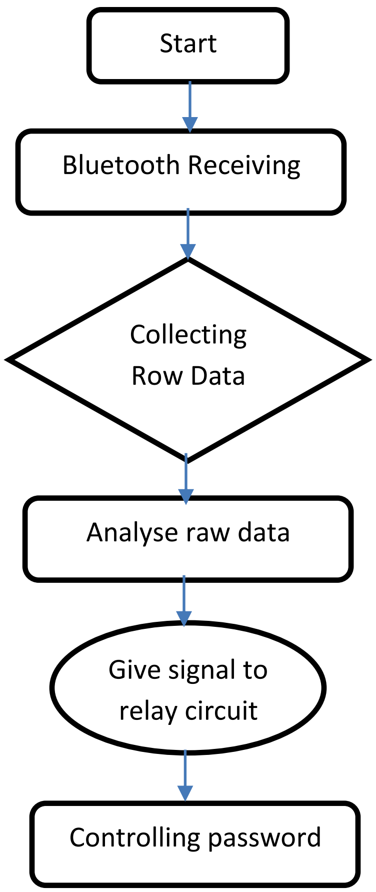
V. Transmission section

Neurosky mind wave simultaneously sends data to the microcontroller. Microcontroller analyzes the raw data to determine user attention level and On-head detection. From the level of user attention, microcontroller gives a signal to relay circuit. After receiving signal from the microcontroller, the relay circuit controls its connected equipment.

b.Neurosky Mind Wave Headset

TheNeurosky Mind Wave is a device, which is used for monitoring electrical signals generated by neural activity in the brain[6]. For measuring the EEG signal of brain, this device is worn on head and consists of headband, an earclip, and a sensor arm containing EEG electrode which rests on forehead above the eye. Neurosky Mind Wave has a Bluetooth communication system. So, it can send its raw data to another Bluetooth controlled device. The measurement of the Mind Wave is raw signal, EEG power spectrum, meters for Attention and Meditation, Blink Detection & On-head detection. Here EEG power spectrum

which provides information on a user’s brainwave like Delta, Theta, Alpha, Beta and Gamma and meters for Attention and Meditation which determines how effectively the user is engaging Attention or Meditation. We get this value by decoding the electrical signal and applying algorithms to provide readings on a scale of 0 to 100. Table.1 contains the values of those brain signals[7].
The Attention meter which indicates intensity of a user’s level of mental ‘focus’ or ‘attention’ to determine levels of concentration and meditation meter which intensity of a user’s level of mental ‘calmness’ or ‘relaxation’. However, Distractions, wandering thoughts, lack of focus, or anxiety may lower the Attention meter level and anxiety, agitation, and sensory stimuli may lower the Meditation meter levels. In this project, we use attention meter and On-head detection[8].



VI. CONCLUSION

This paper presents the design and implementation of noninvasive type of Brain-Computer Interface Brain-Computer Interface technique to control the home appliances using EEG based brain signals. This design is cost effective and easy to build. This paper works on the brain signal for controlling the physical devices and the Protective password system. Therefore, the paralyzed and the physically disabled people can independently do their work like switching on and off the lights and fans by their own and the security system can be enriched using this design. In most of the existing systems had to use a computer but in this model use a microcontroller design is easily upgradable to multiple loads with same number of processing units. In future, it can be used in Automobile applications, Industrial application, Monitoring device applications and Remote control applications.

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