International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 04 Issue: 05 | May -2020 ISSN: 2582-3930

Mind Reading Technology in Cab Booking App

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Abstract -Mind reading is the manner to locate or become aware of other's mental state. Our mental state form the decision that we make, govern how we speak and affect our performance. Mind analyzing refers back to the thought identification and it avails the Functional near-infrared spectroscopy technology. This technology can be used in various ways such as, Military areas, Medical field, and Commercial purposes. If the mind reading system can be implemented in a cab booking app it will be really helpful for all as it will increase the security factor a little bit.

Key Words:mind reading, mental state, cab booking, headband, EEG

1.INTRODUCTION

Human expresses their intellectual states, which include thoughts, feelings and desires every time through the facial expressions, vocal implication and the gestures. Mind analyzing device is the combination of human psychology and laptop techniques. Some equipment are used to collect the facts; then analyzed. Our intellectual states shape the decision that we make, govern how we communicate with every others, and have an effect on our performance. In order to identify a person's mental state we need to get into a person's mental country and that adaptively respond to their intellectual states capacity. This can be done by using a brain sensing headband that can read the signals of the brain and detect the mood of a person. In the proposed system, the driver of the cab will wear the headband that detects his mood. If something abnormal is not detected in his behavior then the booking request for a customer will be sent to him otherwise, the request will be sent to the nearest driver with no abnormal behavior. This feature will increase the security for people who use cab booking apps by decreasing the number of different kind of inconveniences or accidents that occurs due to the unprofessionalism of the cabdriver.

2. LITERATURE REVIEW

In the paper titled "Evaluation of the NeuroSkyMindFlexEEG headset brain waves data" published in 2014 IEEE 12th International Symposium on Applied Machine Intelligence and Informatics (SAMI) by J. Katona; I. Farkas; T. Ujbanyi; P. Dukan; A. Kovari had been stated that, in human mind can be either in the condition of attentiveness or resting, distinctive recurrence changes are noticeable in the range of estimated electric signs of the cerebrum. With respect to recurrence parts of these signs that happen as an outcome of this electric movement, diverse mind waves can be recognized. The electric motivation variations that produced during the activity of neurons can be estimated by the EEG (electroencephalograph) gadget. Before, gadgets that could quantify these cerebrum signal modifications were predominantly utilized in medication. Brain Computer Interface unit has been presented that was developed for further brain wave analysis and ensures the detection of brain waves. Moreover, an application for visualization and further procession of the measured and processed signals had also been described. The application could be used for EEG data acquisition, processing and visualization which could be the base of several further researches. But in the past few years less expensive and easy to use brainwave signal preparing units have opened up and the utilization of the innovation has extended. The proposed system discusses how the mind reading technique can be commercialized in daily life. With the help of the modern body and brain sensors and Bluetooth technology this wireless headband can detect the actual mood of a person and send the detected fact to the servers for further actions.

3.METHODOLOGY

Electroencephalograph(EEG) is a devicethat is usedbytheresearchers to choose up electric currents fromvariousparts of the mind. EEG works by measuring the difference in electrical field that is produced by neurotransmission in real time. In traditional EEG experiments, electrode lines are placed on a person's scalp via a wire that binds them to an amplifier that amplifies the received waves, and a computer that records all the information. Details are presented on the graph in real time as electrons pick up the electric field on the scalp. Scientists determine these data by analyzing the types of waves being transmitted. There are five different energy types: Delta, Theta, Alfa, Beta and Gamma. These neural patterns are determined by electrons and then used by researchers to analyze this behavior. Neurotransication concept will be used to make the program. Thesignal molecule attaches to a specific binding site, opens another target molecule downstream of the receptor, and continues to unlock other molecules and proteins until the target signal is produced. This signal produces and moves the spinal cord to the brain where neurons are located. The signal is transmitted to the neuron via an electrical input known as 'potential action' and travels from the neuron's configuration to the axon domain. The action potential causes the nerve cell to release neurotransmitters (molecular signals) and then bind the receptor to the next neuron. The area between the two neurons where all this occurs is called a synapse. If the electric charge for the neurotransmitters released at the synapse is beyond the limit, then the power of the action will be deducted, but if not, then nothing will happen and that will be the end of the signal transmission. These two states are known as excitatory and inhibitory respectively. When a group of neurons detect this change in electrical stimulation,it produces an electric field such as a small

vibration and can be detected on the scalp by an EEGsensor. In short, the brain receives an electrical signal, which triggers the action of energy within the neurons. The force of action stimulates neurons through the synapse, which produces an electric field located in the senses on the scalp. In the proposed system the mind reading band contains 7 finely calibrated EEG brain sensors, 2 on the forehead, 2 behind the ears and 3 reference sensors to detect the activity of driver's mind. It also has PPG and pulse oximetry breath and heart sensors on the front and right side of the fore head and Gyroscope and accelerometer body sensors. The headband uses Bluetooth connection to send data to the app that will communicate the facts to theserver.

4. BLOCK DIAGRAM

Figure 1: Block Diagram for the system

In the proposed system the driver wears a mind reading headband. The headband after that lets the app collect the facts about the metabolic demands that the mind is making using Bluetooth technology and then interpret the mood of the driver. After that the app sends the collected facts to the server and then if something abnormal is not detected in his behavior then the booking request for a customer will be sent to him otherwise, the request will be sent to the nearest driver with no abnormalbehavior.

5. EXISTING WORK

5.1.A computational model ofmind-reading

The objective is to upgrade the human-PC association through merciful reactions, to improve the profitability of the client and to empower the applications to start cooperation with and for the benefit of the client, without hanging tight for a contribution from that client. The model speaks to these at various granularities, beginning with the Face and Head movements and building them in time and in space to shape a powerful and clearer model of what mental state is being spoken to. Shading, Movement and Shape are then broke down to distinguish the signals like a grin or eyebrows being raised. Blends of every one of these motions happening after some time demonstrate the diverse mental states. For model, a blend of a head gesture, with a grin and eyebrows raised may mean intrigue. The relationship between discernible head and facial movements shows the comparing shrouded mentalstates after some time and is demonstrated using the Dynamic BayesianNetworks.

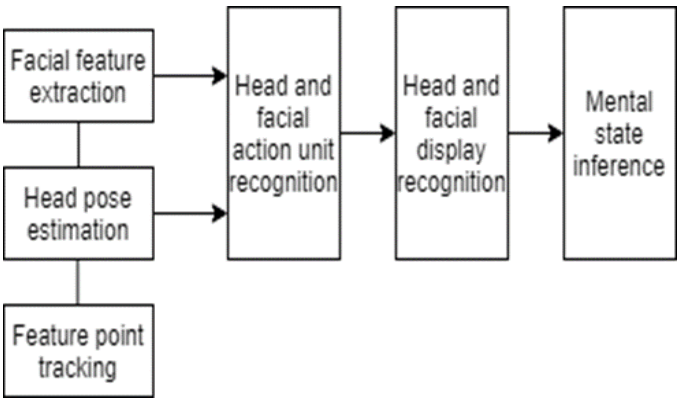

Figure 2: Different stages of mind reading

5.2.B. Mind controlled wheelchair

The Mind controlled wheelchair controls the heading and movement of wheelchair dependent on the choice taken by the client. The psyche wave headset is utilized in the brain controlled wheelchair to get EEG signals from the mind. These signs are prepared by a microcontroller which thus takes a choice with respect to the movement and bearing of wheelchair and as needs be drives the engine. Manual wheelchairs are driven with the assistance of labor as the wellspring of vitality for moving the seat with extra edges called the "Push Ring" for development by pivoting forward or in reverse. The alteration of manual wheelchair is finished by precisely coupling engines to raise wheels in this manner making it an electric wheelchair. The dynamic back wheels are pivoted by engines to the direction that coordinates the present driving course; the framework utilizes differential drive. The proposed gadget end up being successful for individuals experiencing loss of motion where the patient loses power over different pieces of body and furthermore valuable for the mature age individuals. It is a cost effective arrangement contrasted with the costly fueled wheelchairs utilized in the greater part of the current items by electrical and mechanical change.

6.CONCLUSIONS

The Mind Reading Technique that speculate the mental states from the facial expressions along with the pinnacle gestures within real-time can be very useful if it is commercialized. The intellectual state is diagnosed with the brain sensing headband that consists of different mind and body sensors. Implementing this technology in a cab booking app will help to increase the security for the customers. It will decrease the number of accidents occurs due to rash driving.

ACKNOWLEDGEMENT

We would like to show our gratitude towards all the faculties of the MCA Departmentof RV College of Engineering to have some great discussions on this topic and for supervising all the drafts of this paper and helping us to reach to a final conclusion.

REFERENCES

1. Towards a versatile interface: Neural decoding of multiple behavioral variables and delivering sensory feedback versatile brain-machine interface, Mikhail A Lebedev, IEEE2018

2. A new control system for space robot based on Brain-Computer Interfaces. Yan Bian, Xuanfang Wang, Li Zhao, Shigang Cui, IEEE2016

3. A Study to Use a Low-Cost Brainware Sensor to Detect Dementia Atsushi Ito, Alicia Zhu, IEEE2019

4. Evaluation of the NeuroSkyMindFlex EEG headset brainwavesdata-J.Katona;I.Farkas;T.Ujbanyi;P. Dukan, A. Kovari, IEEE 2014

5. Smart City Carpooling Mobile Application Based on Intelligent Route-Prof. S. U. Kadam, Mahesh W. Nimje, SheetalKode, VaibhavTalegaonkar, AnandSangle, IJSR2015

6. EZCab: A Cab Booking Application Using Short-Range Wireless Communication by Peng Zhou, T. Nadeem, Porlin Kang, C. Borcea, L. Iftode, IEEE 2005

7. M. Pantic and L. Rothkrantz. Expert system for automatic analysis of facial expressions. Image and Vision Computing, 18:881–905,2000

8. Cab booking application- Amit Vashistha, RohitGoyal, Aman Chaudhary, Prabu S, IJARIIT2018

9. A Solution for Customer Security in Indian Cabs- T. Yuvarani, R. Varshini, V. AnbuOviya,Mrs. R. Ranitha, IJERT 2018

10. Cross-Domain MLP and CNN Transfer Learning for Biological Signal Processing: EEG and EMG- Jordan J. Bird, JhonatanKobylarz, Diego R.Faria, AnikóEkárt, Eduardo P. Ribeiro, IEEE 2020

11. Shayokchakraborty, HemanthVenkateswara, VineethBalasubramanian, SethuramanPanchanathan, "Active Batch Selection for Fuzzy Classification in Facial Expression Recognition", *Machine Learning and Applications and Workshops (ICMLA) 2011 10th International Conference on*, vol. 1, pp. 241-246,2011