

A review on Mind Reading Computers

¹Riya Prasad, ²Nikita Agarwalla, ³Bhawani Kumari

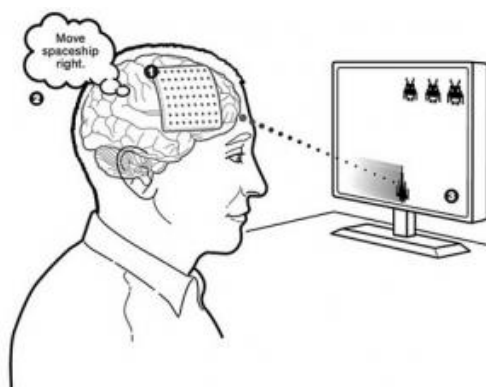
^{1,2,3}Department of IT, C.V Raman College Of Engineering, Bhubaneswar
riyaprasad191@gmail.com¹, nikitaagarwalla758@gmail.com², bhawanikumari208@gmail.com³

Abstract— Mind reading is a technique to read the mind state of other person. This can be done by getting the facial expression and by seeing his activity. It is the ability to infer other people's mental state and use that to make sense of and predict their behavior and also to understand both oneself and other agents in terms of beliefs, desires and intentions. . The aim objective of making this mind reading computer is to facilitate computer technology to comprehend people's emotion and react to their mental state. This paper describes the technique by using that a computer system might read the mental state of a person and thus becomes a mind reading computer.

Index Terms—Mind Reading Computer, Facial Expression, Head Pose Estimation, Electroencephalograph and brainwave

I. INTRODUCTION

Mind reading computer may be defined as a machine that infers the human being's mental states. It is the ability to attribute mental states to others, and use that to understand the actions and expressions of others within an intentional or goal-directed framework. Mind reading can be achieved by studying and analysing the expression of once face and the movement of head by calculating the volume and amount of oxygen inside the blood.



II. NECESSITY OF MIND READING

The technique of mind reading is about reflecting human thoughts, emotion and desires. The primary step of mind reading is by understanding the facial expression because human being usually exhibit their state of mind through

facial expression and gestures. Despite any interaction or not .since, our performance is highly affected by our mental state as it has direct impact on the decisions we make and the way we react. Our thoughts are the main reason for the events occurring around us. Thus, we can know if someone around us possesses wrong intentions. As this can identify criminal intentions, we can prevent them by changing their minds before the action is performed. Hence, make this world a better place to live in. Till date just the desire of reading minds has been established, but some day this technology can come to play. Life can be made flexible by implementing mind reading computer. This technology can prove to be immense importance for physically handicapped people. It also improves human-human interaction.

III. FACIAL ACTION UNIT ANALYSIS

Facial action analysis is done by Facial Action Coding System(FACS).It is capable of analysing mind by testing components of face such as yaw left and right, lip pull, lip pucker, depress and stretch, mouth stretch, jaw drop, lips apart, eyebrow raise inner and outer etc. The motion of Individual facial muscles which are encoded by the facial action unit analysis system from another instance changes the facial appearance. It is a general way to systematically classify the physical expression of feelings and emotions, it has been proven a breakthrough in the field of psychology and to animators.

IV. EYE LANGUAGE INTERPRETER

Eye language interpreter recognizes eye expressions off image sequences and interprets them as mental states. We identify head position and orientation, eye (and eye-brow) position and gaze actions units as the most relevant ones in addressing the problem of understanding eye expressions. We then develop a mapping between mental states and eye expressions.

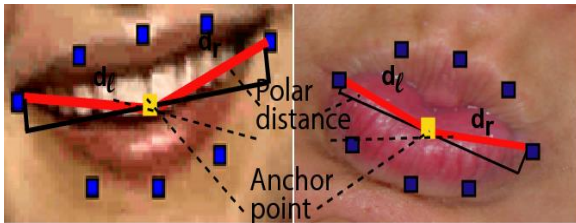
V. HEAD POSE ESTIMATION

The head pose estimation uses invariant feature points for pitch estimation (500), yaw (500) and roll (300) . For an instance, the estimation of head yaw using ratio of left point to right point of eye widths and estimation of head roll using the angle between the two inner eye corners. The identification of facial actions is done by different

features comprising of motion, shape and color descriptors. For a real time video system, motion and shape-based analysis is highly suitable.

VI. LIP POSITIONING ANALYSIS

In the process of lip positioning analysis, it identifies the corner pull and lip pucker the distance between each corner of lip and the arch so formed is then computed. The average percentile difference in the distance is calculated in comparison with the initial face reference. It can also tell if mouth is open or closed by determining the difference in color of teeth and aperture, this is done through color descriptors.



VII. BIO-FEEDBACK

The process which enables an individual to change physiological activity in order to improve health and performance is known as Bio Feedback. Different physiological activities such as brainwaves, heart functioning, breathing, muscle activity and skin temperature are measured precisely. There are instruments that accurately receive feedback and these feedbacks can lead to changes in physiological activities. The person needs to be connected to an electroencephalograph (EEG) and certain particular set of brain signals. The connection is then monitored.

VIII. STIMULUS AND RESPONSE

Response to stimulus comes automatically to every person there is no need to train the brain to manipulate any brainwave. When a person is given a stimulus, through mind reading techniques we can measure the volume and level of blood around a person's brain. The person is made to wear a headband which sends light in the spectrum tissues and blood-filled tissues. The results are then computed by comparing it to an MRI.

IX. ADVANTAGES

Mind reading computers could help in preventing terror, it could also enable effective and truthful communication, understand people who cannot talk. Mind reading computers can be used in military field and interrogation purposes.

X. DISADVANTAGES

Through mind reading computers, there can be breaches in privacy, reduces safety, through this technology our minds can be used in wrong ways, confidential information can be extracted also these computers are not entirely accurate.

XI. CONCLUSION

Mind reading computer provide us the opportunity to determine people's state of mind and utilize it to make sense and guess their future actions. Some technology help us gather information from facial expression and gestures which is then evaluate to read the mind of an individual.

REFERENCES

- [1] <http://www.slideshare.net/radhikapratapwar/mind-readingcomputer>
- [2] <http://1000projects.org/mind-readingcomputer-seminar-report.html>.
- [3] <http://www.huffingtonpost.com/news/mindreading-technology/>
- [4] <https://www.ijcsmc.com/docs/papers/June2014/V3I6201497.pdf>
- [5] <https://developer.android.com/studio/>
- [6] H Johansen-Berg, H Dawes, C Guy, SM Smith, DT Wade, PM Matthews, "Correlation between motor improvements and altered fMRI activity after rehabilitative therapy", *Brain*, vol. 125, no. 12, pp. 2731-2742, 2002.
- [7] IEEE Transactions on Pattern Analysis and Machine Intelligence, 19(7):775-779 (1997). Face Recognition by Elastic Bunch Graph Matching Laurenz Wiskott, Jean-Marc Fellous, Norbert Krüger, and Christoph von der Malsburg
- [8] Face Recognition by Extending Elastic Bunch Graph Matching with Particle Swarm Optimization Rajinda Senaratne¹, Saman Halgamuge¹, Arthur Hsu² ¹Department of Mechanical Engineering, Melbourne School of Engineering, The University of Melbourne, Australia; ²Bioinformatics Division, The Walter and Eliza Hall Institute of Medical Research, Australia Email: rajinda_s@hotmail.com, saman@unimelb.edu.au, hsu@wehi.edu.au

