Dissociative Identity Disorder

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Abstract **- Dissociative identity disorder previously known as multiple personality disorder is thought to be a complex psychological condition that is likely caused by many factors including severe trauma during early childhood usually extreme , repetitive physical , sexual, or emotional abuse. Our aim is to diagnosis the DID/MPD authentically by using the bio signals. The analyzed bio signal acquired from MPD patients is referred with normal bio values. A bio signal acquire from the LIE DETECTOR using p300 for authentically proving DID. Bio signal such as EEG, ECG are taken for DID diagnosis. Till now treatment for DID requires many stages of counselling and end of the treatment solely depend on behaviour changes. Though there may be similarity between DID patient and malinger patient, the differences are proved by our phenomena.**

Keywords - Bio **signal, lie detector, MPD, diagnosis**

I. INTRODUCTION

Many of us day dream or lose our thoughts or forget stuffs while working .such as way, DID is a form of dissociation, it involves lacks of connection in a thought, feelings, memories. Sometimes the subjects lack sense of identity and experience trauma experience.

The concept of MPD is quite complicated .The person literally dissociates himself from a situation or experience a painful situation may cause harm to oneself and other. Observation of brain wave in MPD subject are in experimental stage without any conclusion .The diagnosis of the disorder is only based on self report or behaviour .Thus malingers a most likely to be found in this disorder.

II. STUDY OF MULTIPLE'S BEHAVIOUR

DID include presence of two or more distinct personality which controls the person's behaviour. The patients are usually recommended for counselling session .They lack their access to their personal information.

There are high distinct memory variation along with fluctuation of person's personalities. The personalities are commonly referred as "alters". It is obvious and clearly seen that each alter possess different age , sex or race. They have their own postures, gestures. Usually, they have imaginary people. The Action of the alter to take control over the individual's behaviour is called as switching .The switching occur according to the therapist request under hypnosis. DID is most likely to be understood as borderline personality disorder or difficulties in coping ability or stresses or trust issues in emotional relationship

Other types of dissociative disorders defined in the DSM-5, the main psychiatry manual used to classify mental illnesses, include dissociative amnesia (with "dissociative fugue" now being regarded as a sub type of dissociative amnesia rather than its own diagnosis), and depersonalization /derealization disorder.

A. NORMALITY AND ABNORMALITY

Abnormality is seen on both the cases.

(i) EEG is the test use to find problem related electrical activity of a brain. EEG tracks and records brain wave patterns. EEG changes for MPD patients when alter tends to come out. It remains the same until the person regain his conscious self. The normal EEG consist of alpha and theta waves according to the reference point. But abnormal EEG is irregular, gamma waves may or may not occur according to the alters character. The EEG of a normal patient as follows

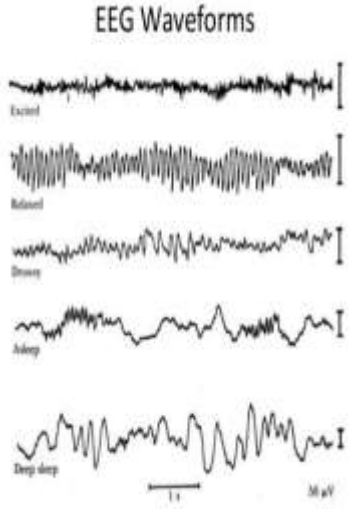

Fig. 1. Normal EEG signal

Abnormalities of EEG are used for detecting many neural diseases. DID patient will have abnormal EEG changes which is given to LIE DETECTOR to prove the difference between the DID patient and the malinger using P300. Lie detector is used to record physiological function to know the truth or falsehood in the response of patient during series of questions.

Police department uses lie detector for law enforcement .we are using to differ DID patient from malinger.

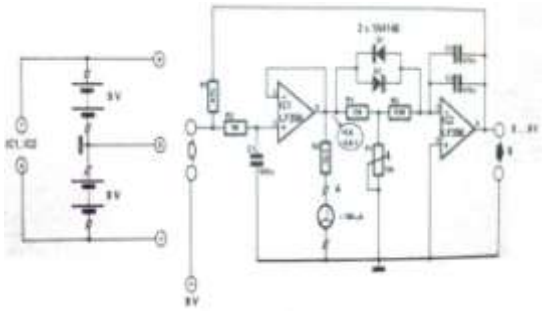

Fig. 2. Lie detector circuit

(ii) P300 wave is a component of event related potential which is seen in the process of decision making. Its occurrence totally depends on persons reaction to the stimulus.EEG records brain activities based on its potential. On other-hand, ERP measured brain response directly from thought or perception. It may be cognitive , sensory, or motorist events. Among many types of signal P300 is most important in detecting lies. Though they are three types of P300 stimuli to detect malinger, probe stimuli can be used. Probe stimuli are related to hidden information known only to lying subjects and the observers. Subjects are equipped with electrocap. Among many channels on the electrocap, Fz,Cz,Pz,O_1 and O_2 are chosen.

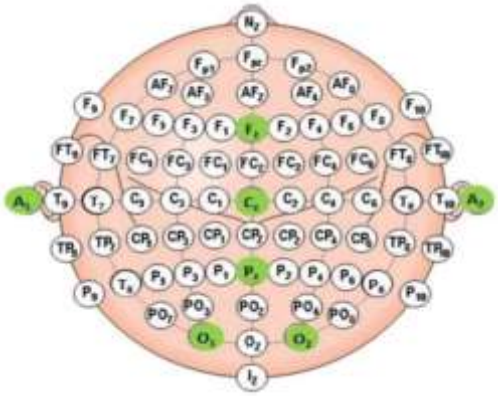

Fig. 3. Channel used to acquire the signal

Despite being straight forward, the process is tedious and could be done through numerical program. The most suitable method for this is SVM classification. Hence, Matlab based program, which is able to detect lies by utilizing signal P300 and SVM method, is proposed.

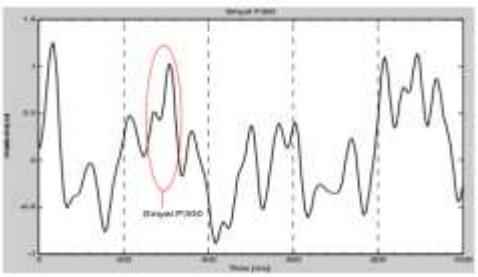

Fig. 4. Stimulus probe for lying subject

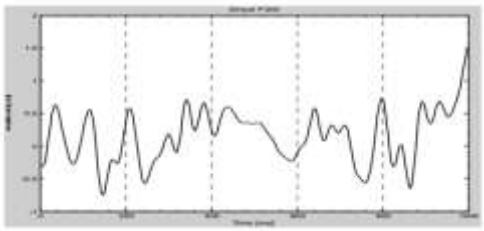

Fig. 5. Signal of stimulus probe for innocent subject

(iii) ECG is a process of recording the electrical activity of heart with electrodes placed on the skin over a period of time. Qualitative differences between physical and emotional stress can be determined by ECG wave forms.

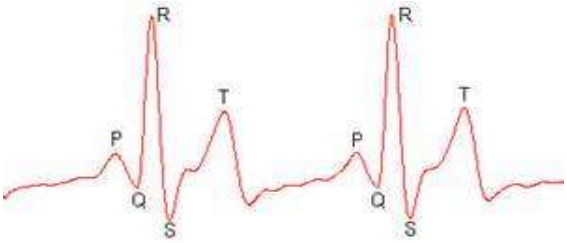

Fig. 6. Normal ECG signal

During physical stress the ST segment is more depressed, P wave amplitude were larger. During emotional stress the QT and PQ were significantly shorter. The ECG changes during emotional stress are similar to the ECG changes during right stellate stimulation. ECG changes during physical stress are similar to the ECG changes obtained during left stellate stimulation. The result does not support the suggestion that emotional stress evokes a physical stress which may lead to metabolically maladaptative situation. The R wave represent early ventricular depolarization. Dominant R wave in aVR is due to poisoning with sodium– channel blocking drugs. Example Tricyclic antidepressants.

B. RECORDING SETUP

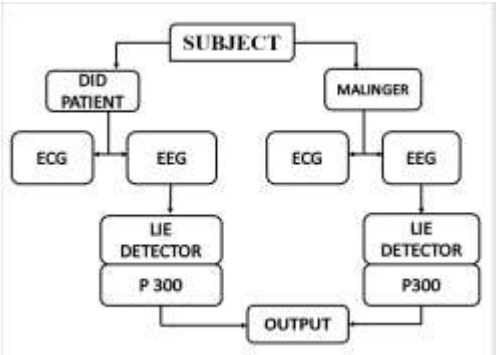

Fig. 7. Block diagram

C. REFERENCE VALUES:

(1) ECG :

P WAVE --- 0.25 mV

R WAVE ---1.6 mV

Q WAVE --- 25% OF RWAVE

T WAVE --- 0.1 -0.5 mV

(2) EEG :

ALPHA --- 8-13 Hz

BETA --- 13-22 Hz

GAMMA--- 22-30Hz

THETA --- 4-8 Hz

DELTA --- 0.5-4Hz

D. EXPLANATION

All bio signals are compared with appropriate reference value as mention above. Only EEG is given to Lie detector for the differentiation. The pulse is given as a input to lie detector but for better efficiency for diagnosis of DID, EEG signal is given as input. The total representation depends on how to differentiate patient from malinger. The above setup is used to simplify the diagnosis process of DID.

III. CONCLUSION

Thus diagnosis of DID using bio signal is detected. This method is executed after basic preliminary counselling section. During the outcome of alter, even a small changes can be detected through our diagnosis method. By using all the three parameter and lie detector, diagnosis process become easy and efficient. Thus our ultimate aim is to differentiate DID patient from malinger.

IV. ABBREVIATION AND ACRONYMS

DID - Dissociative Identity Disorder

MPD - Multiple personality disorder

ECG - Electrocardiography

EEG – Electroencephalography

ERP – Event related potential

SVM -Support Vector Method

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