

A Survey on Artificial Intelligence in Brain Finger Printing Technology for Medical Applications

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Abstract: -- At current due to the life style changes and the dietary changes there arises various changes in genes, which in result affects the human body in various factors and symptoms. And the processing of medications for those genetic diseases is too in a complex situation as some viruses change their properties time to time. Through the help of the Brain Finger Printing Technology it can be analysed at very earlier stage. Though this technology can predict the disorders, the time taken to ensure the disease by humans takes longer time. By using Artificial Intelligence it is possible to ensure the disease in a very short period of time.

Keywords:- Brain Finger Printing Technology-Symbolic AI-Computational Intelligence-Mermer-P300.

I. INTRODUCTION

Brain Finger Printing Technology is an advance technology used to determine whether specific information is stored in the subject's brain by measuring electrical brain waves and recording a brain response known as a P300-MERMER in response to words or pictures presented on a computer screen. At present this technology is mainly used to detect the criminal cases. But this technology can also be used to detect the genetic disorders in a human body. By the research it is revealed that using artificial intelligence in brain figure printing technology it gives a very exact result in a very short period of time. The use of artificial intelligence in brain figure printing can give a revolutionary progressive result to predict the genetic disorders as soon as possible. By the implementation of AI, this technology can bring Out the stages of the disorder or diseases in the human body and it is very useful to suggest the medication, dietary and life style changes.

II. LONG TERM EVOLUTION

Artificial intelligence is the intelligence of machines where an intelligent agent is a system that takes actions which maximise its chances of success. John McCarthy coined the term in 1955, defines it as "the science and engineering of making intelligent

machines". The goals of AI research include reasoning, knowledge, planning, learning, natural language processing, and the ability to move and manipulate objects. Currently popular approaches include statistical methods; computational intelligence and traditional symbolic AI. There are a large number of tools used in AI, including versions of research and mathematical optimisation, logic, methods based on probability and economics, and many others. The AI field is interdisciplinary, in which a number of sciences and professions converge, including computer science, mathematics, psychology, linguistics and neuron science. The field was founded on the claim that central property of humans, human intelligence-the sapience of homo sapiens-"it can be soon precisely described that a machine can be made to simulate it. Artificial Intelligence can be divided into two categories as Symbolic AI and Computational Intelligence.

III METHODS OF AI

Artificial Methods can be divided into two categories as

A) Symbolic AI:

It focuses on the development of knowledge based systems that's a computer system capable of giving advice in a particular domain utilizing knowledge provided by a human expert.

B) Computational Intelligence:

It focuses on neural networks, fuzzy systems and evolutionary computing, that is neural networks are biologically inspired systems consisting of massively connected networks of computational neurons organised in layers.

IV BRAIN FINGER PRINTING TECHNOLOGY

When an action is performed in a human body the record is stored in the brain of the human body. Relevant words, pictures or sounds are presented to a subject by a computer in series. With stimuli, the brain wave responses is measured using a patented head band equipped with EEG sensors. P300, specific measurable response emitted by the brain of a subject who has the relevant information stored in his brain is collected. The person to be tested wears a special head band with electronic sensors that measure the electroencephalography from several locations on the scalp. Brain Fingure Printing uses cognitive brain response; brain fingure printing does not depend on the emotions of the subject nor is it affected by emotional responses. It is fundamentally different from the polygraph which measures emotion based physiological signals such as heart rate sweating and blood pressure. Also unlike polygraph testing it does not attempt to determine whether or not the subject is guilty or not.

**V. BRAIN FINGER PRINTING TECHNOLOGY
IN MEDICAL FIELD.**

The incidence of Alzheimer's and other forms of dementia is growing rapidly throughout the world. There is critical need for the technology that enables early diagnosis economically and that can also accurately measure the effectiveness of treatment of diseases research has demonstrated that analysis of P300 brain wave cans so dementia on se and progression. MERMER technology development and patented by brain fingure printing laboratories includes the P300 brain wave and extends it, proving the more sensitive measure than the P300 alone.

First generations tests have proven to be more accurate than the other routinely used tests, and could be commercially available it into 18-24 ones. The 30

minute test involves wearing a head band with electrodes technicians then present words, phrases and images that are both known and unknown to the patient to determine whether the information that should be in the brain is still there. When presented with the familiar information's the brain response by producing MERMERS, specific increase in neuron activity. The technician can use this response to measure how quickly the information is disappearing from the brain and whether the drugs they taking or slowing down the process. Using the very precise measurements of cognitive functioning available with this technology, pharmaceutical companies will be able to determine more quickly the effects of their new medications and potentially speed FDA approval.

VI MERMER METHODOLOGY-

When a person is exposed to a information, there is increase in neuron activity which results in an increase in voltage. Typically within 300-1000m/sec after the stimulus. That response with increase in voltage is known as P300.A MERMER is a part of the brainwave observed in response to familiar information. When the brain recognises something neurons are fired synchronously, eliciting characteristic changes in brain activity. It is these changes that investigators look for when trying to determine whether someone recognises particular pieces of information.

It has three types of stimuli as Target, Irrelevant and Probe.

**VII THREE TYPES OF MERMER
MATHODOLOGY**

There are three types of stimuli presented by MERMER methodology

A) Target:

The target stimuli are made relevant and more worthy to all subjects.

B) Irrelevant:

These have no relation to a situation under diagnosis

C) Probe:

Probes are the stimuli that are relevant to the situation under diagnosis.

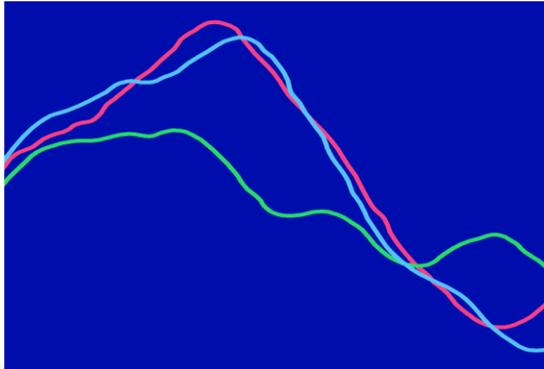
VIII TESING METHODS

A subject lacking information relevant to the situation under diagnosis recognises only two types of stimuli: target and irrelevant. A subject with specific information is relevant to situation under diagnosis however recognises all three types of stimuli: targets irrelevant and probes.

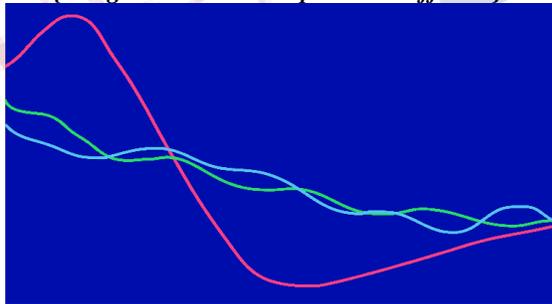
A suspect is tested by looking at three kinds of information represented by different coloured lines.

- A) **RED**: Information the suspect is expected to know(target)
- B) **GREEN**: Information not known to suspect(irrelevant)
- C) **BLUE**: Information of the crime that only preparatory would know (probe).

IMAGES:



{Image shows that the patient is affected}



{Image shows that the patient is not affected}

IX APPLICATIONS OF AI IN MEDICINE

A medical clinic can use AI systems to organise beds schedules, making a staff rotation and provide medical information. Artificial Intelligence also has its applications in the field of cardiology, neurology, embryology, complex operations of internal organs.

Using the very precise measurements of Artificial Intelligence, pharmaceutical companies will be able to determine more quickly the effects of their medications.

X DIAGONISING THE DISEASES

A) Alzheimer Disease

Alzheimer disease is a neurological disorder in which the death of the brain cells causes memory loss and cognitive decline.

B) Genetic Test

A gene known as APOE-e4 is associated with higher chances for the age of 55 years developing Alzheimer.

C) Cancer

Berg Health Institute uses an Artificial Intelligence to compare the biological profiles of individuals with aggressive forms of cancer to the biological profiles of people who don't have cancer. The AI predicts who will respond the best to a drug based on differences between the profiles.

X1 ANALYSIS

According to the research to predict the medications it is necessary to diagnose the viruses where it is necessary to process more than a trillion data points in a single tissue. Therefore using the Artificial Intelligence in Brain Finger Printing technology we can process the data collected from the diagnosis. By using Artificial Intelligence it is easy to compare the biological profiles of individuals with aggressive forms of cancer to the biological profiles of people who don't have cancer. The AI then predicts who will respond best to the drug, based on differences between their profiles.

(RESEARCH IN PROGRESS)

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