Brain Fingerprinting is a brain mapping technique that uses electroencephalography to ascertain the presence or absence of information in a subject’s brain based on electrical activities in the brain. As a new forensic psychology investigative and investigative tool, Brain Fingerprinting technology stands poised to exert a tremendous impact on the presentation and outcome of selected legal cases in the near future. This rise and frequency of heinous crimes and terrorist activities have nations across the globe scrambling for quick deployment of alternative tools to help combat these crimes. When physical evidence, witness and any other forms are unavailable for investigating agencies in a case, to get the lead and right direction this technology is useful, especially blind murder cases. The Brain Fingerprinting technology has undergone through a series of software updates and validation testing to improve on user experience and processing speed.

KEYWORDS: Brain Mapping, Brain Fingerprinting, Electroencephalography.
Brain Fingerprinting scientifically identifies whether information is stored in the brain by precisely measuring brainwaves.

i. Brain Fingerprinting scientifically identifies whether information is stored in the brain by precisely measuring brainwaves.

ii. Unlike a conventional polygraph, which detects an emotional stress response on the theory that people are more stressed when lying, Brain Fingerprinting only detects whether the information exists within the brain or not.

iii. The system is fully automated using a laptop and specialized wireless headset, and has an accuracy rate of over 99%.

**MERMER (Memory and Encoding Related Multifaceted Electroencephalographic Response)**

Brain Fingerprinting Technology is based on the discovery that the P300 is only a subcomponent of a more complicated response called a MERMER. The MERMER is elicited when a person recognizes and processes a stimulus that is particularly noteworthy to the subject. When details of a crime are known to the suspect, a MERMER will be detected. A MERMER will not occur in an innocent subject.

**India's First Brain Fingerprinting Lab:**

India's First Brain Fingerprinting Lab was established at Institute of Research & Development (R&D), Raksha Shakti University (RSU), Ahmedabad on 28th September, 2015. Institute of Research & Development, took the initiative to validate this technology in India. Starting with simulation studies, which included different case scenarios and testing was in progress. Real cases were also being referred from the Central Bureau of Investigation (CBI), CBI is utilizing this technology and reported to have charge-sheeted in the referred few cases at the jurisdictional Courts utilizing Brain Fingerprinting examination report. In some cases, the Brain Fingerprinting expert of Institute of Research & Development, Raksha Shakti University visited the respective branch/unit of CBI concerned for conducting the Brain Fingerprinting Examination. Till date, the validation of this technology is providing satisfactory and positive results in India.

In one case, referred from Special Crime Branch (SCB) Unit, CBI, Mumbai. The SCB team had charge-sheeted and accused was arrested only on the basis of Brain Fingerprinting Examination report. Accused had confessed of committing the crime. Now, waiting for the final verdict from honorable High of Rajasthan.

The Central Bureau of Investigation (CBI), Special Crime Branch (SCB), Mumbai had given an “Appreciation Certificate” to the expert for conducting of the Brain Fingerprinting Examination in three cases that led to find the solution as early as possible. This proved that Brain Fingerprinting Technology is valid in India scenario, when other forensic tools proved futile in the examined cases.

**Application:**

Brain Fingerprinting can be applied successfully to solve different types of crime/dispute situations/investigations such as:

- **Personal/Violent Crimes:** Aggravated assault, Forcible rape, Murder, Robbery.
- **Property Crimes:** Arson, Burglary, Larceny-theft, Motor vehicle theft.
- **Other Offenses:** Curfew violation/loitering, Disorderly conduct, Driving under the influence, Drug law violations, Embezzlement, Forgery and counterfeiting, Fraud Gambling, Liquor-law violations, Offenses against the family, Prostitution and related offenses, Public drunkenness, Runaways, Sex offenses, Simple assault, Stolen property, Vandalism, Weapons, Vagrancy.
- **Other Crimes:** Corporate/white-collar crimes, Financial crimes, Hate crimes, Identity theft, Organized crime, Cyber Crime, Medical Crime, Terrorism, Spousal Conflicts, Infidelity.

**Other areas of Application:**

- **Counter Terrorism:** Detects information only a terrorist would know such as names, aliases and roles of individuals involved in financing and terrorist operation, specific IED training, clandestine groups.
- **Counter Intelligence:** Identifies and associate a suspected person with specific knowledge of unauthorized knowledge, tactical plans for past operations, and financial details of illicit transactions.
- **Human and Drug trafficking:** Human trafficking is a crime that exploits women, men, and children; all human beings are at risk and should take insult to trafficking of their fellow man for the purposes of sex or forced labor.

When a trafficker uses secrecy and lies to uphold the crimes, brain fingerprinting technology unlocks that information for law enforcement and investigative agencies.

- **Immigration and Border Security:** There is no national security without border security. Border security plays a key role in both the exclusion of illegal drugs and in defending countries against outside threats. Weak borders allow terrorists and smugglers, as well as millions of illegal aliens, easy entrance to desirable countries.

Brain fingerprinting helps protect countries by aiding in the prevention of criminals, terrorists and terrorist’s weapons, including weapons of mass destruction, from entering a foreign nation.

**Brain Fingerprinting Credibility and Advantages**

This latest technological crime solving tool, which provides an accurate, reliable and systematic process to conduct criminal investigations in a non-invasive manner. It can be used efficiently and affordably to:

- Identify criminals quickly and scientifically.
- Exonerate the innocent and prevent lawsuits from false accusations.
- Gather intelligence information and uncover espionage and terrorists plots.
- Detect accomplices and members of gangs and criminal organizations.
- It is object and system driven. Does not depend on the subjective judgment of the person conducting the test.
- Very useful and effective in counter intelligence and counter terrorism activities cases.
- Suspects cannot beat their own brain. No known counter measures.
- Admissible in US Court.
- Result does not have false positives or false negatives.
- It can be applied in varied situations where evidence can be collected.
- Brain Fingerprinting technology is reliable with 99.9% accuracy achieved.
- Brain Fingerprinting is published and peer reviewed in relevant scientific journals.
- It is tested and proven by FBI, CIA and US Navy with results published in peer review journals.
- Portable.
- User friendly.
- Minimum maintenance.
- Highly customizable.

**Conclusion:**

The recent terrorist attack in Germany, France, Bangladesh, Pakistan...
and the United States shows how vulnerable our population is to terrorism. While the financial implications of terrorist activity when it happens easily amounts to billions of dollars lost, the psychological effect and trauma lives with the individuals and the nation forever. Thousands of rape, murder, criminal offences, human and drug trafficking offenses go unsolved and possibly thousands languish in jail over wrongful convictions.

Law enforcement officers are now faced with ever more growing need for information gathering, therefore access to information for investigative and intelligence-gathering purposes is essential. Brain Fingerprinting is an advanced means of getting intelligence by detecting memory records of terror plans, training or crime stored in the brain of suspects. It eliminates number of suspects and its highly accurate tool used to corroborate/cross verify assumptions and leads.

Thus, the Brain Fingerprinting Technology will pave a path for a new scientific method in the field of Investigative Psychology, which will definitely reduce the time span in Investigation by delivering the accurate result.

REFERENCES