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Expression of Interest

Subject: Finalization of Specifications for BEOS regd.

Central Forensic Science Laboratory, Pune under Directorate of Forensic Science Services, Ministry of Home Affairs, Government of India, intends to procure Brain Electrical Oscillation Signature Profiling System (BEOS) for establishment of Forensic Psychology Division. Accordingly broad-based specifications of BEOS are uploaded for inviting expression of interest from the prospective vendors. The comments may be sent to this office latest by 31st March 2022.

CENTRAL FORENSIC SCIENCE LABORATORY * PUNE * DIRECTORATE OF FORENSIC SCIENCE SERVICES GOVERNMENT OF INDIA

11/3/22
Director
CFSL, Pune

Director & Scientist 'E'
Central Forensic Science Laboratory
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BRAIN ELECTRICAL OSCILLATION SIGNATURE PROFILING SYSTEM

Technical Specifications

A comprehensive Brain Electrical Oscillation Signature Profiling (BEOS) system that can detect Experiential Knowledge in a subject by analyzing the brain Electrical activity recorded from the scalp of the head from at least 30 sensors, and its response to specific stimuli that invoke / probe certain autobiographic memories.

1. Mandatory Features

a) The system should be built for use in a Forensic / Suspect Screening environment, including automated reports, data security and case management.

b) The system should have demonstrable single trail analysis, processing beyond the basic Concealed Information Test / Guilt Knowledge Test

c) The system and software should be specialized for suspect screening examination and use at least 30 channels of EEG data for recording and data analysis. The system should record and report real time eye movement and ECG in the recording charts.

d) The system should mandatorily and automatically differentiate and report cognitive processes such as primary processing, encoding, artifacts, presence of sensory – motor imageries etc.

e) The system should present stimuli as auditory probes, and the probes should be presented only when the baseline activity is stable and acceptable – it should be possible to set the parameters for at least 4 frequency bands (delta, theta, alpha, beta) before presenting a probe.

f) It should be possible to present auditory probe in any language.

g) It should be possible to use the system on illiterate people who cannot read and write.

h) The system should perform auto analysis and reporting of BEOS data and cognitive processing.

i) The system should support online display of captured data – Online stacked FFT, Online Spectral Brain maps.

j) The system should have pre – selectable paradigms for Eyes Open / Eyes Closed / Baseline and BEOS data recording.

k) The system should be able to record audio probes trim the audio probes, and playback audio probes and images. It should have inbuilt real time presentation of audio probes

time-locked to BEOS data, and present the BEOS data while playing back the audio sentence or video displays.

l) The system should provide dual time locked video recording, for a clear front view and side view of the subject. The video data should be time locked to the BEOS recording, and should be accessible while viewing the BEOS data.

m) The system should automatically report all responses, and for significant responses separately, without manual selection.

n) The system should auto generate reports without manual interference or analysis.

o) The system should be able to record and maintain cases, image, audio sentences, and tie them together in the form of a case, subject and recording

2. Basic Acquisition and Analysis Features

(1) Online capture and display of bioelectric activity from at least 30 cephalic channels, and 1 EOGh, 1 EOGv (eye movement), 1 EMG, 1 ECG and 2 or bipolar channels.

(2) Online Display of images, audio sentences

(3) Automated conversion of continuous bioelectric activity into epochs

(4) Simultaneous display of probes and activation waveform

(5) View visual probes and Play audio probes

(6) Automated analysis, detection and reporting of Inattention in subject

(7) Automated frequency based analysis and other analysis

(8) Auto formatting of baseline activity for each probe

(9) Auto frequency setting for analysis

(10) Auto computing and identifying artifacts in the activity produced by each probe

(11) Auto computing profiles for processing the presence of Experiential Knowledge

(12) Automated Forensic Report generation with indication of presence/absence of Experiential Knowledge related to each probe

(13) Auto comparison of brain activity, the autonomic measure and their interpretation

(14) Auto detection of various types of activation response types

(15) The text of the audio presented should be a part of the data file generated and non-editable