

# **Preliminary Study on Neural Correspondence of Human Trust**

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## **Abstract**

Automated systems have evolved very rapidly into complex sophisticated tasks and advanced technology. Trust can play an important role in understanding the cognitive complexity and increased uncertainty associated with a complex automated system. Therefore, measuring human operators' level of trust while interacting with automation is vital in predicting their performance. This research focused on investigating the participants' cognitive processes through evoking trust and mistrust situations. The brainwaves were recorded in real time to identify specific brainwaves and active regions of the brain using electroencephalogram (EEG). This study adopted selected words from a previous study that evoked trust and mistrust through situations. This research used a power spectrum analysis and coherence analysis to examine the simulation results. The results identified while alpha and beta waves were stronger in the trust situations, which the frontal and parietal lobes were stimulated, gamma waves were stronger in the mistrust situations, which the temporal and occipital lobes were stimulated.

## **Keywords**

Keyword 1. Trust 2. Mistrust 3. Brainwaves, 4. Electroencephalogram 5. Power spectrum

## **Biographies**

**Dr. Seeung Oh** is an Adjunct Professor in the department of Applied Engineering Technology at North Carolina Agricultural and Technical State University, Greensboro, USA. He earned PhD in Industrial and Systems Engineering at North Carolina Agricultural and Technical State University in 2018. Dr. Oh's research interests include human factors and ergonomics design with neurological technologies, human trust in automated systems, decision-making and brain-computer interface (BCI) and user interface(UI) design and information visualization.

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