

SS-15: Cognitive Human-Computer Interaction

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The Human-Computer Interaction (HCI) mostly involves the study of the interaction between the user and the computer. In Cognitive Human Computer Interaction, researches are conducted on how Human-Computer Interaction combines with behavioral sciences and results in interaction at the user interface which includes both software and hardware. Research areas include: Brain Signal-Based Emotion recognition, Brain Signal-based Medical Applications, Neuromarketing, Brain Signal-based Human Cognition Enhancement, Brain Signal-based E-learning, Brain Signal-Based Haptic Interfaces, Brain Signal-based Games.

The proposed session is well aligned with the major themes of Joint 17th World Congress of International Fuzzy Systems Association and 9th International Conference on Soft Computing and Intelligent Systems due to the fuzzy nature of the brain signals, which is a major component of Cognitive Human-Computer Interaction.

The paper titled "BCI-Based Alcohol Patient Detection" investigates the possibility of detecting of alcohol patients using Electroencephalogram-based signals. The authors review the classification of Electroencephalogram (EEG) signals correlated with alcoholic and nonalcoholic subjects. EEG signals, which record the electrical activity in the brain, are useful for assessing the current mental status of a person. Alcohol consumption of people became a social problem as well as health hazards. Nowadays, more and more people wanted to travel back and forth to various places, With increasing of vehicular population and their movements on the roads, accidents are steadily increasing. Many road accidents are reported due to the consumption of alcohol by drivers and driving vehicles. This study investigates about the difference between drunked and non-drunked peoples brain signal using Electroencephalogram (EEG).

The paper titled "A Brain Signal-Based Credibility Assessment Approach" investigates the possibility of detecting the credibility using Electroencephalogram-based signals. Deception detection is important for legal, moral and clinical purposes but still it is harder even for security officers and judges. Therefore an effective, light weight approach is a must. There are several technologies used in deception detection. EEG based deception detection is one such approach. P300 wave is most commonly used in EEG based deception detection which depends on a stimuli. This study provides an alternative approach to deception detection instead of using P300.

The above papers describe the promising results obtained by the authors using EEG signals, which is a proven method to investigate the brain activities. The novel approaches used for investigations open avenues for the researchers to further explore the possibility of using the investigated methodologies for commercial-grade productions.