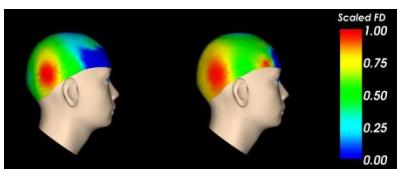




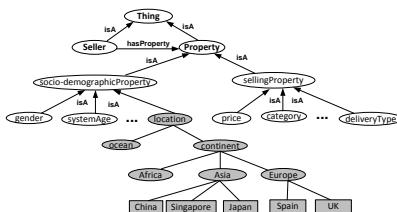
DATE: 14 August 2012, Tuesday
TIME: 11:00am – 12:10pm
VENUE: IMI Seminar Room, Research Techno Plaza
 Level 03-01, XFrontiers Block
 *Lunch will be served



EEG Features in Mental Tasks Classification

WANG Qiang, PhD Student, EEE & IMI

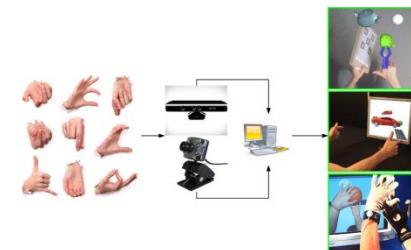
Electroencephalographic (EEG) signals are the time series recording of electrical activities along the scalp, which allows monitoring the brain activities with high temporal resolution. Mental tasks classification based on EEG signals had attracted recently more researchers as it could be used in real-time applications such as neurofeedback systems, e-learning, etc. In this work, different types of features extracted from EEG signals were compared based on the mental tasks classification accuracy using SVM classifier. Novel Higuchi Fractal Dimension Spectrum (GHFDS) was proposed for quantification of the self-similarity of EEG signals. Random forests (RF) method was used for supervised feature selection. Among these features, statistical features could obtain the best classification accuracy. Channel from occipital lobe (O2) had the highest importance rank as this lobe is responsible for visual perception. Real-time mental tasks classification application is proposed based on these experiments.



A Generalized Stereotypical Trust Model

FANG Hui, PhD Student, SCE & IMI

Stereotypical trust modeling can be adopted by a buyer to effectively evaluate trustworthiness of a seller who has little or no past experience in e-marketplaces. The buyer forms trust stereotypes based on her past experience with other sellers. However, when the buyer has limited past experience with sellers, the formed stereotypes cannot accurately reflect her trust evaluation towards sellers. To address this issue, we propose a novel generalized stereotypical trust model. Specifically, we first build a semantic ontology to represent hierarchical relationships among seller attribute values. We then propose a fuzzy semantic decision tree (FSDT) learning method to construct trust stereotypes that generalizes over seller non-nominal attributes by splitting their values in a fuzzy manner, and generalizes over nominal attributes by replacing their specific values with more general terms according to the ontology.



Model-based Hand Tracking for Real-time Virtual Object Manipulation

LIANG Hui, PhD Student, EEE & IMI

Human hand is an essential body part for human-computer interaction (HCI) due to its various usages in gesture recognition, animation synthesis and virtual object manipulation.

While lots of research has been done to recover the hand pose from visual inputs, accurate hand pose estimation remains a challenging problem due to its high degree of freedom and self-occlusion.

In the proposed research, we rely primarily on a novel fingertip and palm tracking scheme for full degree of freedom hand pose estimation.

Currently we have built a real-time hand tracking system, based on which two HCI applications are also developed to demonstrate its capability.