Computer Science Lunch Talk

on Brain Computer Interfaces from Beste Filiz Yuksel of Tufts University

Thursday, October 30 at noon

Pizza lunch will be served

The communication bandwidth between the human and the computer is very narrow compared to the complexity of information available on either end. A new generation of brain computer interfaces (BCIs) are currently being built that can passively detect the cognitive state of the user without any additional effort or attention on the part of the user. The BCI can then use this information as an additional input channel that adapts the user interface in real-time based on the user’s cognitive state. We present an example of such a BCI-system using a musical BCI that adds or removes harmonies on a piano based on pianists’ cognitive state while improvising.

Beste Filiz Yuksel is a Ph.D. candidate in the Human-Computer Interaction Lab at Tufts University, studying under Prof. Robert Jacob. Her research is on a new generation of brain-computer interfaces (BCIs) that detect and evaluate real-time brain signals using machine learning classification of functional near infrared spectroscopy (fNIRS) to build adaptable user interfaces for the general population. Her interests include user interaction in the area of musical improvisation as well as exploratory data analysis in the field of visual analytics. Beste received her Master’s in Computer Science from University College London, UK, where she built a BCI using the P300 signal to select physical objects and a hybrid-BCI in a fully immersive virtual environment. She also received a Master’s in Neuroscience from Kings College London, UK, where she built software to automate dissection of fibers of the corpus callosum.