



Research Assignment - 2009

Title of research assignment

Noninvasive brain computer interface design

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Research abstract

Researchers at Northeastern University are collaborating with clinicians at the Oregon Health and Science University under NIH, NSF, DARPA, and NLMFF funding to build brain computer interfaces to enable persons with various conditions (locked in syndrome, autism) to be able to communicate with computers in order to enable them to communicate with their loved ones and caregivers, as well as to increase their independence and access to information.

The researcher will design algorithms for signal processing and pattern recognition in Matlab in order to process electroencephalography (EEG) signals for the purpose of building a brain computer interface. The technology can enable persons with various cognitive, neural, and motor disorders to communicate with computers, as well as creating a novel human computer interaction paradigm for the broader population. Work will primarily involve designing and implementing algorithms, but depending on data acquisition schedules, researcher may get involved with experimental design and data collection from subjects.

Research activities/experience

The researcher is expected to have great interest in mathematics and its applications in signal processing and machine learning. The topics of interest for this research include calculus, linear algebra, optimization, and probability & statistics. While basic or advanced knowledge will be helpful, it is not required and the only requirement is a strong interest in mathematics. Programming experience is useful; prior experience with Matlab is not required.

