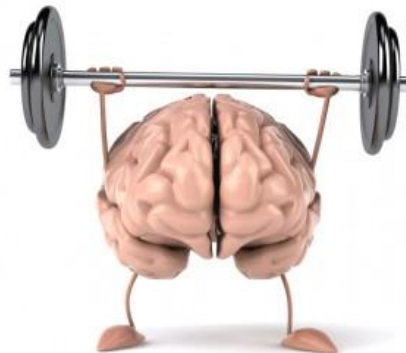




Master project, ESPCI Paris

Cognitive Brain-Computer Interface

A Brain Machine Interface (BMI) is a system where a direct connection is established between the brain and a machine, providing a subject with a new communication channel, allowing him to interact with his environment without activating his muscles and peripheral nerves. Cognitive functions are the mental processes of an individual's sensory perceptions and psychological functions. Using BMI targeting cognitive functions, one can design an apparatus for the monitoring of cognitive deficits and for the rehabilitation of impaired cognitive functions.



A BCI prototype, the BrainPC project, was developed in ESPCI Paris. Electroencephalographic (EEG) signals collected by a 16-channels BrainAmp amplifier are converted into machine-readable commands. This system is coupled with a human-machine interface. The student will be involved in the development of an extension of the BrainPC project to neurofeedback applications (sustained attention, working memory, somatosensory attention). The project navigates cross-border between (1) signal processing and modeling and (2) cognitive neuroscience.

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