Brain Machine Interface: Technology, Culture, and Society

- Fly toy helicopters with your mind

- DJ music based on your mood

- Control video games by how you feel

- Monitor health by recording brain waves

- Can we upload our consciousness to the internet?

- Are concepts shown in Sci-Fi movies possible in reality?

- Does pop culture inspire front-end science, or vice versa?

Electroencephalography

- Today, human brains waves can be used to control computer cursors and manipulate wheelchairs.

EEG-controlled wheelchair - McMaster University
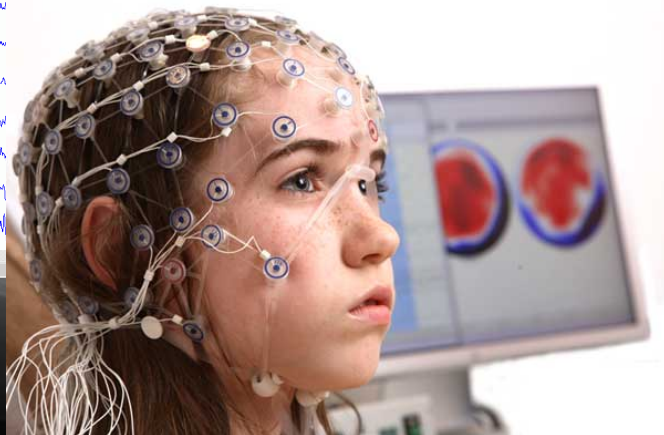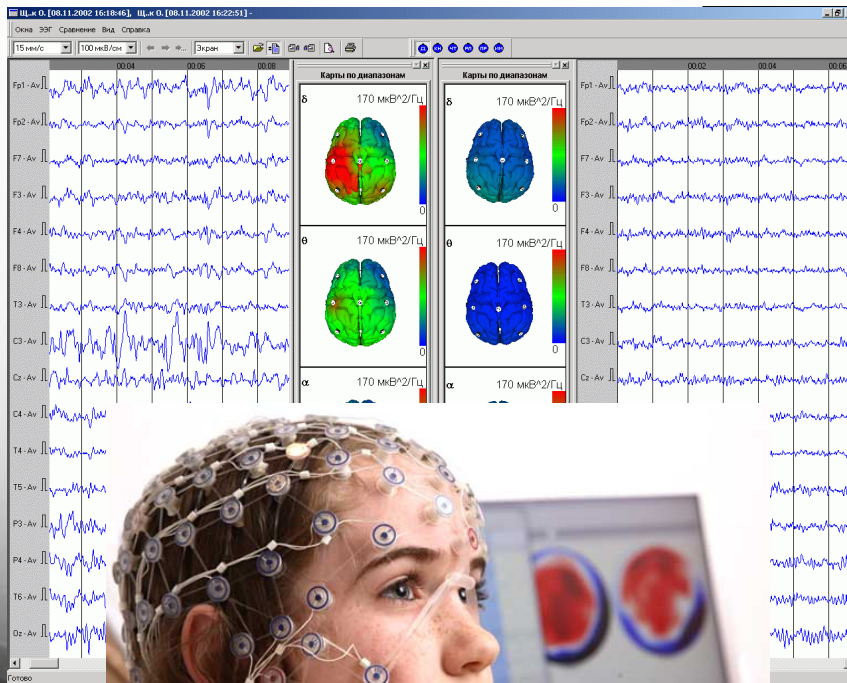
Modern Neuroprosthetics

- Conversely, a machine can feed data into human brain to enhance its performance.

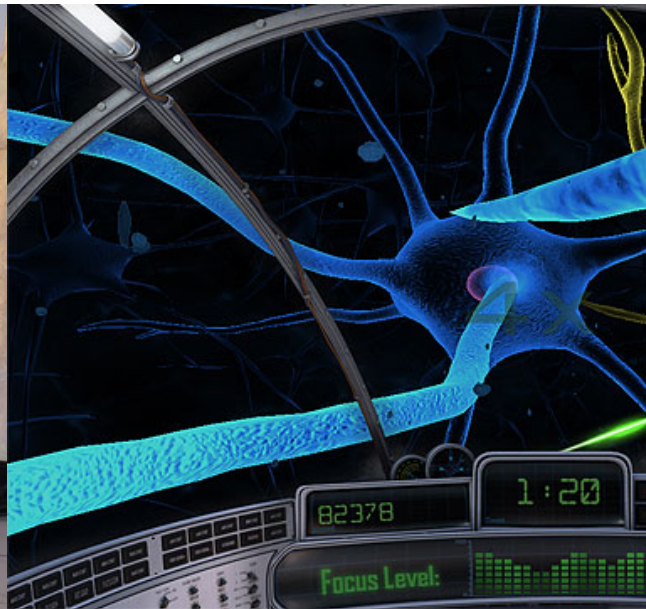Retinal Prosthesis

Cochlear Implant

Brain-Machine Interfaces

- This course introduces current trends in the gaming industry, patient care, sports enhancement, military field, and also daily routines.
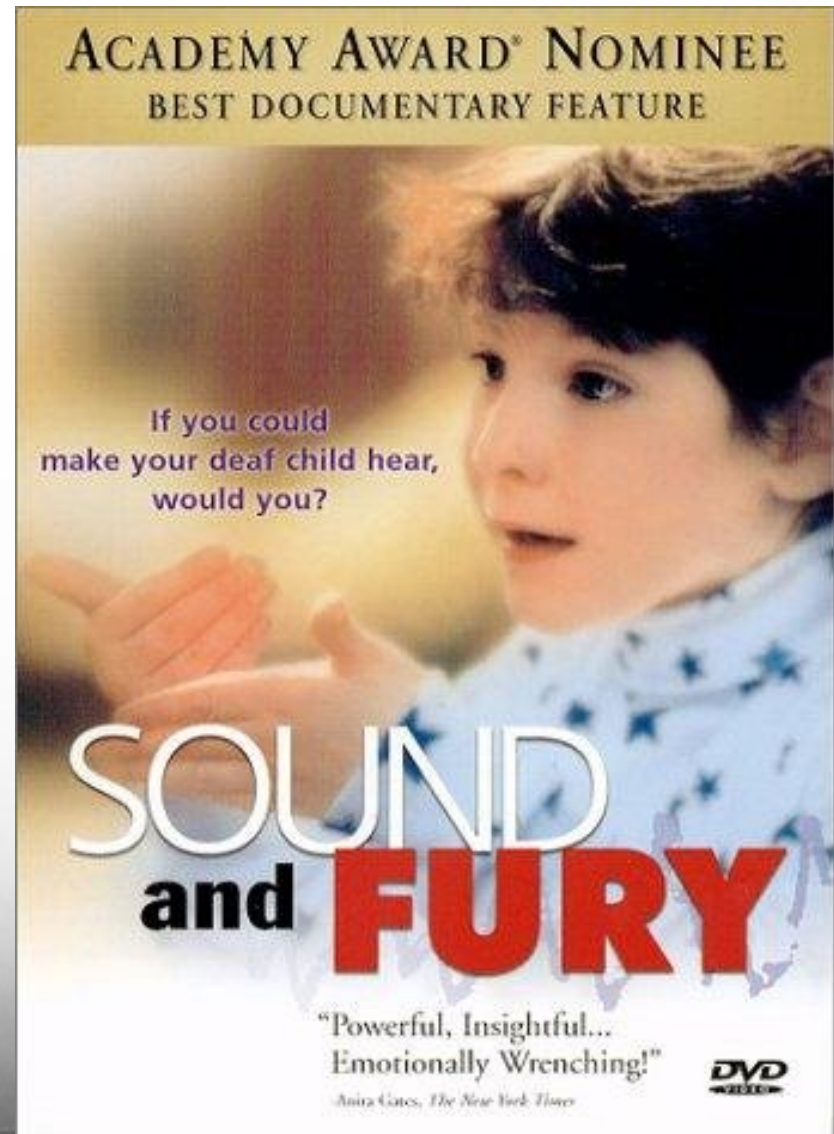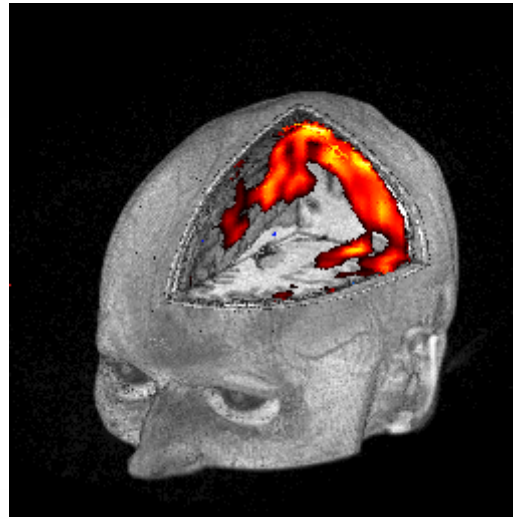

NeuroDisco

NeuroStorm

NeuroWear

- Students will learn basic working principles, and gain hands-on experience in design and operation

Social Challenges

- What is the public's current perception of science?

- How are regulations involved in technology transfer?

- What ethical consideration need to be addressed?

- How can awareness be promoted?

Course Aims

- Encourage intellectual exchange between students in the context of brain-machine interface.

- Consider the impact on health care, medicine, and technology

- Practice translating abstract scientific knowledge into working systems.

- Learn basic principles in biology and engineering in the broader context of societal needs, i.e. pop culture, technology transfer and legal regulation