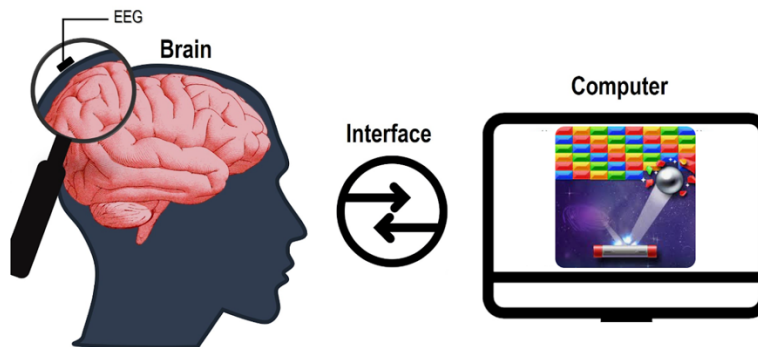# Development of a neurofeedback-based computer game

Proposal: We are looking to develop a brain-computer interface to couple neural signals measured via electroencephalography (EEG) to control in real-time the movement of an object in the context of a computer game.

We are looking for two students to work on the following projects
(start time: June 2023):

Project 1: Development of the neurofeedback loop
Task 1: Get familiar with the recording of EEG signals
Task 2: Identify a way to analyse EEG signals in real-time
Task 3: Build a basic neurofeedback system using EEG signal fluctuations

Project 2: Game development and neurofeedback implementation
Task 1: Develop a (simple) computer game
e.g., a bar moving left-to-right and right-to-left to meet a bouncing ball
Task 2: Implement the neurofeedback loop
designed in Project 1 to control the bar movements

These projects would allow students to gain hands-on experience in software development in the neurofeedback research sector using the most novel methods to date. Students would also gain hands-on experience in the acquisition of EEG data in humans.

Interested students should be proficient in programming languages such as Python/JAVA. A basic understanding of EEG and neurofeedback methodology would be useful, but not necessary. Students with experience in game coding is a plus.

Contact Information: If you would be interested in either of the projects, please contact Juliana (juliana.zimmermann@tum.de) or Rachel (rachel.nuttall@tum.de) to discuss the projects further.