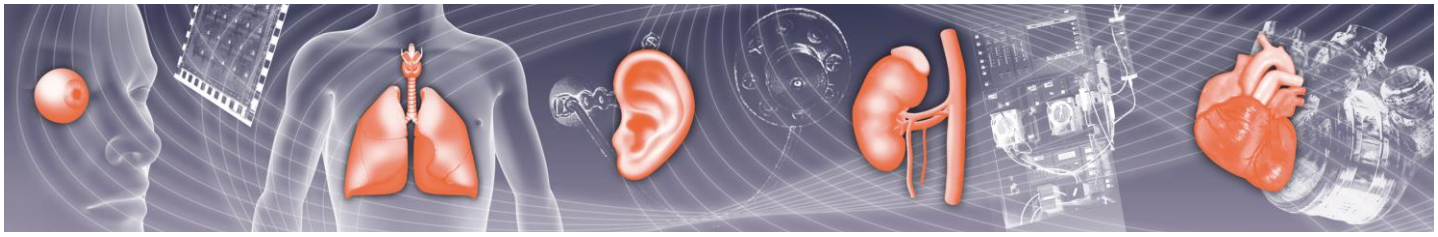
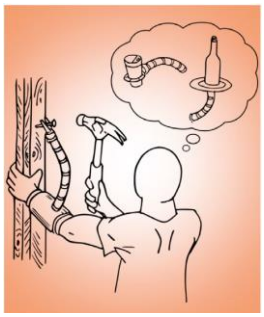


PhD Position – Virtual training environments to facilitate control of supernumerary limbs

ARTORG Center for Biomedical Engineering Research
University of Bern, Switzerland

The **Motor Learning and Neurorehabilitation laboratory** is an interdisciplinary group that gathers the knowledge and expertise of mechanical and biomedical engineers, computer scientists, neuroscientists and psychologists. Our research focuses on human-machine interfaces and biological learning, and, specifically, on the use of robotic assistance and virtual reality (VR) to aid people in learning motor tasks and rehabilitate after neurologic injuries.

The possibility of using robotic devices as assistive devices is promising, since robots can allow neurological injured patients to gain independence. Although there has been a significant effort to develop robotic arms to assist patients to perform activities of daily living, only a small number of these devices are present in home settings. This is explained by the difficulty of the patients to interact and control the supernumerary robotic arms (e.g., using EEG, EMG, and kinematics data) in combination with their own arms. The goal of this project is to boost the learning to use a supernumerary robotic limb in combination with the natural arms.



We are seeking a motivated PhD student to develop new training strategies in VR to boost learning to use the “third arm” (e.g., by employing visual and haptic feedback). The candidate will employ immersive virtual environments (using head-mounted displays), where subjects will see the rendered “virtual third arm” and their own upper body as a virtual avatar in order to develop and test the feasibility of his/her novel training strategies. The candidate will then evaluate the transfer of learning from virtual reality to control the real robotic arm. The candidate will have the freedom to put his/her own ideas and creativity to work.

For this position, we are looking for an active and self-motivated person with a master’s degree in computer science, bioinformatics, biomedical engineering or electrical/mechanical engineering. Experience in game design and/or robotic neurorehabilitation is highly appreciated. Interest to collaborate with an interdisciplinary team of roboticists, neuroscientists, and cognitive scientist and willingness to interact with older patients is important.

The position is available immediately; the starting date can be discussed. The duration is fixed at three years.

We look forward to you joining our team!

Questions?
Always feel free to contact Prof. Dr. Laura Marchal-Crespo, at laura.marchal@artorg.unibe.ch or +41 31 632 93 44. Please send your complete application via e-mail.

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