Fully Funded PhD Position in Bionic Prosthetics, Motor Learning and Virtual Rehabilitation

Charité – Universitätsmedizin Berlin is one of Europe's most prestigious university hospitals, with a rich history dating back over 300 years. The Charité is spread across four locations with around 100 clinics and institutes, which are bundled into 17 Centres. Recognized globally for its excellence in medical research, clinical care, and education, Charité consistently ranks among the top hospitals worldwide (27th, THE).

The Unfallkrankenhaus Berlin (UKB) is a maximum care trauma centre with over 730 beds on 26 wards and an admission ward. The hospital has 17 operating theatres, including one in the centre for severe burns and four for outpatient operations, and has an interventional cardiology department with three cardiac catheterisation laboratories, a centre for physical therapy and rehabilitation, a research centre and a centre for emergency training.

We offer the opportunity to work at a high scientific level in an experienced research team at the intersection of research and clinic in a joint PhD at the Charité and Occupational Hospital Berlin. Our extensive interdisciplinary infrastructure enables local as well as international co-operations across life sciences, technology and medicine. We encourage initiation of new research projects, publishing in leading scientific journals and presenting our research at national and international conferences. This fully funded PhD position provides an excellent opportunity to contribute to innovative research and make a significant impact in the field of extremity reconstruction.

Become part of the PlayBionic working group and contribute to research in technological neurorehabilitation. Your role will involve developing virtual rehabilitation ideas and creating extended reality environments for human-machine interaction and health applications. Our aim is to help patients with prosthetic control, phantom limb pain, neuromuscular impairments, and limited hand functionality through clinical validation.

Located in Berlin, Charité and UKB offer an inspiring environment for both professional and personal growth. Berlin's dynamic scientific community and diverse cultural landscape provide endless opportunities for enrichment and networking.

Key Responsibilities

- **Research**: Propose and conduct high-level research projects in the field of extremity reconstruction, robotic prostheses, virtual rehabilitation and gamification. This includes designing and executing experiments, collecting and analyzing data, and interpreting results.
- **Projects**: Design and implement immersive therapy approaches, such as combining mirror therapy with augmented and virtual reality, to alleviate phantom limb pain and enhance patient engagement in therapy. Conduct fundamental research to deepen the understanding of neuropathic and phantom pain. Engage in hands-on work with patients to directly apply research findings and improve therapeutic outcomes.

Qualifications

- Master's degree (or equivalent) in a relevant field such as medical informatics, biomedical engineering, computer science, game design, cognitive science, or similar disciplines.
- Programming skills in Matlab, Python, Unity 3D or comparable
- Ideally experience with biomedical assessment, analysis, and data processing (EMG, motion tracking, eye tracking, etc.).
- Previous research experience in a related field, demonstrated by publications, conference presentations, or project involvement.
- Strong analytical and problem-solving skills, proficiency in research methodologies, and data analysis.

- **Collaboration**: Work collaboratively with a multidisciplinary team of researchers, clinicians, and on campus prosthetic technicians. UKB Berlin offers the BrainCloud, a space dedicated to extended reality research and therapy. Engage in international cooperations across medicine and technology.
- **Publications**: Prepare and publish research findings in leading scientific journals. Present research at national and international conferences.

- Excellent written and verbal communication skills in English. Speaking German is an asset but not a requirement.
- High level of motivation and commitment to scientific research. Ability to work independently as well as part of a team.
- Interested in continued learning "What you don't know you can always learn".

We Offer

- Full funding for 2 years as per the German public service pay scale (TV-L E13/65%) according to DFG regulations. The doctoral contract will comply with section 2.1 of WissZeitVG regulations with possibility of extension.
- Opportunity to work in a high-caliber research team within leading hospitals.
- Access to extensive interdisciplinary infrastructure and resources for conducting collaborative, advanced research.
- Open and pleasant working atmosphere.
  Options for flexible working hours to accommodate personal needs and promote work-life balance.

Application Procedure

Prospective candidates are invited to submit the following application materials as a single PDF file via email to the contact address provided. Please ensure that your application is marked with the Code PROS22410:

- Submit a detailed CV, cover letter (1 page), academic transcripts, and contact information for two references in a single PDF file.
- Application deadline:
  The review of applications will commence immediately and will continue until the position is filled. Early submission is highly encouraged to ensure full consideration.
- Position will be available from January 2025.

Contact:

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