

PhD Position Movement Biomarkers in Stroke Recovery

Vitznau – 100% – 3-4 years – September 2026

The Lake Lucerne Institute (LLUI) is an independent, non-profit research and education institute based in Vitznau, Switzerland, committed to developing and implementing technological solutions that improve rehabilitation outcomes and bridge the gap between theory and practice. Within the Therapy Science Lab, our research focuses on ubiquitous rehabilitation—aligning interventions with a patient’s clinical state, lesion characteristics, and multimodal biomarkers to optimize therapeutic effectiveness, across the pathway of care. This research axis is embedded in the CEREBRIS project, an EIC Pathfinder Open initiative conducted by a consortium of 14 European partners.

We are seeking a highly motivated PhD student interested in research in upper limb marker less motion capture, synthetic data evaluation, movement classification, and outcome modelling in stroke populations. The position offers the opportunity to advance and deploy scalable biomechanical assessment systems in clinical and research environments, directly contributing to patient-centered rehabilitation planning and service optimization.

Background

The CEREBRIS project aims to establish a novel, data-driven framework for the management of neurological diseases, with an initial focus on stroke. By integrating advanced artificial intelligence methodologies with clinically meaningful digital biomarkers, the consortium seeks to transform the stroke care pathway—from early diagnosis and targeted treatment decisions to continuous monitoring and outcome prediction.

The project encompasses the development of several interlinked applications including an automated motor function interface utilizing marker less 3D motion capture (AxoMotris).

CEREBRIS offers the opportunity to contribute to an interdisciplinary European research project at the interface of neurorehabilitation, movement analysis, multimodal data, and AI-supported stroke care. Within the AxoMotris part of CEREBRIS, the PhD candidate will focus on identifying movement biomarkers relevant to stroke recovery using clinical and sensor-based data.

The position provides exposure to multimodal clinical and laboratory-based data acquisition, collaboration with computer scientists, engineers, clinicians, and translational researchers across Europe, and insight into how digital health technologies are developed, evaluated, and prepared for clinical translation.



Beyond strengthening your scientific and methodological expertise, you will gain experience in clinically grounded research that connects neurorehabilitation, movement science, and data-driven approaches. By project completion, the broader CEREBRIS technology is expected to reach Technology Readiness Level 4, corresponding to validated laboratory demonstration.

Your Role

Your responsibilities will include:

- Upper-limb marker less kinematics (50%) – Contribute to development and validation of multi-view (primary) and monocular (secondary) marker less motion capture pipelines, and a quality assurance framework for kinematic datasets.
- Synthetic data (10%) – Support generation and implementation of synthetic data.
- Clinical interpretable information (20%) – Assist in translating kinematic outputs into clinician-interpretable formats.
- Scientific writing and dissemination (20%)

Your Profile

We are looking for a motivated and committed candidate who brings:

Mandatory skills

- Master's degree in Biomechanics, Biomedical Engineering, Computer Vision, Computer Science, Neuroscience, Health Science, Biomedicine, Physio- or Occupational Therapy, or related field.
- Experience with computer vision or motion analysis methods
- Python, C# or equivalent language expertise
- Basic knowledge of machine learning or deep learning
- Understanding of study design and statistical modelling

Desirable Skills

- Exposure to musculoskeletal modelling
- Experience with motion capture pipelines
- Familiarity with containerisation or version control workflows
- Interest in regulatory AI reporting frameworks
- Interest in synthetic data generation

Personal Profile

- Reliability and structured working
- Strong communication skills in English (oral and writing)
- Enthusiastic, friendly, and communicative approach to work

Job Advertisement

Workplace

Your primary workplace will be LLUI in Vitznau, Switzerland. The Therapy Science Lab is embedded in a translational research environment, working closely with clinical partners to create ubiquitous, adaptive neurorehabilitation pathways."

What We Offer

Joining LLUI means becoming part of a small, motivated team of researchers committed to closing the gap between theory and practice. You will work in a collaborative and interdisciplinary environment in one of Switzerland's most distinctive research settings, on the shores of Lake Lucerne in Vitznau.

LLUI offers a unique and stimulating work environment that combines world-class rehabilitation practice with cutting-edge research, together with access to research infrastructure, data, and expertise at the interface of healthcare, technology, and science. You will be directly integrated into an interdisciplinary clinical research environment with clinical and technical partners, and you will have the opportunity to contribute to research with potential impact on patient care and rehabilitation practices. In addition, LLUI provides supervision and mentoring to support your professional development, a modern and flexible working culture including remote work options, genuine room to take initiative and help shape the direction of your field, as well as competitive compensation in a supportive and collaborative environment.

We are committed to equality

LLUI is committed to equality in general and gender equality in particular. We welcome applications from all qualified candidates regardless of origin, gender, age, or background. Our commitments are set out in our [Gender Equality Plan](#).

Application

Please submit your application by 30th of June 2026, including:

- CV
- Cover letter
- Diplomas and transcripts
- Contact details of two referees

Please send your application to therapy.science@llui.org. Incomplete applications or applications that do not match the published profile will not be considered. For further information, please visit llui.org. Questions regarding the position should be directed to therapy.science@llui.org.