

# Master Student Project / Internship:

## Empowering IMU Technology - Transitioning from Android to iOS

**Workplace:** Lake Lucerne Institute AG, Switzerland  
(on-site accommodation pending availability)

**Project duration:** 3-4 months (flexible) at 100%, flexible start date

**Supervision:** Dr. Aileen Naef, Lake Lucerne Institute AG, Vitznau, Switzerland  
Dr. Chris Awai, Lake Lucerne Institute AG, Vitznau, Switzerland

**Project background:** In neurological rehabilitation and fall detection, integrating Inertial Measurement Units (IMUs) is vital for advancing research and clinical practice. IMUs aid in comprehensive gait analysis, providing objective metrics for assessing motor impairments and tracking progress in conditions like stroke, Parkinson's, and spinal cord injuries. They also enable real-time detection of fall events and gait instability, alerting the users, caregivers or medical professionals via smartphone applications or similar platforms. In order to be able to detect and alert, it is important to ensure that all operating systems (Android and Apple) can process the IMU data. At the moment, our system only enables Android processing of the IMU data, putting Apple users on the sideline. We are, therefore, looking for an intern capable of transitioning our Android system to iOS.

### Your tasks:

- Review the existing Android app's features, UI/UX design, and architecture.
- Identify components that need to be ported to the new Swift app.
- Adapt the UI/UX design of the Android app to fit the iOS design guidelines
- Rewrite the codebase in Swift, adhering to iOS development best practices and design patterns
- Test and debug

**Your profile:**

- Enrolled as a student in Software Engineering or related field
- Strong knowledge in app development (Android, iOS)
- Knowledge of scientific computing languages (Python, Swift)
- Strong conceptual skills, independent working style
- Curious mind and capable of working independently

**Our institute:** The Lake Lucerne Institute AG is a non-profit research centre located in Vitznau, Switzerland. Our institute has a focus on developing and implementing technological solutions to improve neurorehabilitation outcomes. We work on digital, objective assessment solutions and their implementation into clinical routine. These are used to evaluate novel interventions applying a broad range of tools (fMRI, EEG, neurophysiology, movement analysis, robotics). The institution works closely with a neurorehabilitation centre to ensure true multi-stakeholder integration within each research project.

**We offer:**

- A unique and stimulating work environment combining world-class neurorehabilitation practice with cutting edge research
- Exciting technology platforms including an MRI facility, robotics systems for state-of-the-art motor learning paradigms, mobile brain imaging systems and movement sensor systems, neuromodulation lab, movement lab (immersive virtual reality with 6D motion platform and motion capture), computer vision lab, GPU compute clusters
- Direct exposure and deep integration with a clinical research environment, incorporating a wide range of practitioners and patients

**Curious? So are we!**

To apply please send a cover letter outlining your motivation and experience in the field, CV and a transcript of records to [marine.ducrot@llui.org](mailto:marine.ducrot@llui.org) and [aileen.naef@llui.org](mailto:aileen.naef@llui.org). Questions regarding the position should also be directed to these contacts.

Further information about the Lake Lucerne Institute can be found at: [www.llui.org](http://www.llui.org).