



Announcement Master, Bachelor and Study Thesis

Development and evaluation of a smartphone app for annotation and documentation of geriatric mobility tests

Description:

Promoting mobility in old age is becoming increasingly important in everyday life and in healthcare. In order to successfully plan the timely facilitation of mobility, it is first and foremost necessary to record the current abilities of the elderly person using standardised assessment instruments. The Lübeck Scale of Basic Mobility (LSBM), developed by the Geriatrics Research Group Lübeck, is a proven mobility assessment for use with geriatric patients with reduced mobility, which consists of seven sub-activities [1].

To build a reliable machine learning model for human activity recognition, a large amount of annotated data is required. Smartphone applications can help guide the annotation process to ensure that errors are minimised and high-quality annotations are created. Using a mobile application also makes it easier to use the annotations created for classification tasks.

In the context of this thesis/student research project, an app for the annotation of activities and determination of LSBM severity is to be developed. This thesis can be designed with regard to the following topics:

- Further development of an already existing Java (Android) application for activity annotation
- Evaluation of the mobile application and testing of usability (usability study)
- Processing of annotations and collected data for the development of machine and deep learning models for the classification of activities

In the case of a student research project or similar, a connecting thesis is possible.

This work is being carried out in cooperation with the Research Group Geriatrie Lübeck, Krankenhaus Rotes Kreuz Lübeck – Geriatrie Zentrum (<https://www.forschungsgruppe-geriatrie-luebeck.de/>).

Keywords: Data processing system, wearables, Java, app development, geriatrics, mobility, deep learning, annotation

Start: Immediately or by arrangement.

[1] Mobilität standardisiert erfassen – was eignet sich im Pflegeheim? <https://seniorenheim-magazin.de/expertenbeitraege/mobilitaet-standardisiert-erfassen-was-eignet-sich-im-pflegeheim/>

[2] Cormier, Mickael: A Data Annotation Process for Human Activity Recognition in Public Places <https://publica-rest.fraunhofer.de/server/api/core/bitstreams/8365c283-8e0e-4b9d-9071-11d36d6ab717/content>



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If you are interested and have any questions about this topic, please feel free to book an appointment via: <https://calendly.com/fudickar/>

Dr. Sebastian Fudickar

Medical Informatics Initiative Junior Research Group

Integration and Analysis of Multimodal Sensor Signals and Clinical Data for Diagnostics and Investigation of Neurological Movement Disorders (MoveGroup)

Further thesis topics at: move.ulü.de or at

<https://www.imi.uni-luebeck.de/forschung/ag-move.html>