Lehrstuhl für Eingebettete Systeme
Prof. Dr.-Ing. habil. Ch. Haubelt

MA / BA / SpecM / PA

Analysis of a superposition methodology for training and using gesture recognition algorithms

Description

Gesture recognition becomes widely used for a lot of different applications and scenarios. Be it a simple shake of a smartphone to e.g. turn off the screen, or detecting steps for a fitness tracker. To be reliable, the gesture recognition has to be designed and evaluated for as many scenarios as possible. E.g. when the user is running, sitting in a train or a car. Therefor a lot of data has to be recorded. To remedy this problem, a superposition technique was devised that can overlay a gesture with the typical movement from an environment. Your task for this work is to familiarize with the superposition technique and evaluate its usefulness as an alternative to recording the gestures for each scenario. Therefore you have to implement multiple algorithms for gesture recognition and compare the results from the 'traditional' measurements with the results from the generated measurements from the superposition.

The following tasks have to be conducted:

- Familiarize with the method used for the superposition of gestures
- Literature research for common gesture recognition algorithms
- Implementation of the algorithms
- Design and conduction of test cases for the superposition with different gesture recognition algorithms
- Evaluation and illustration of the results
- Discussion and documentation of the results

Prerequisites:

- Experience with Inertial Sensors and Sensor Fusion
- Programming skills to implement the chosen gesture recognition methods

Supervisor:

- M.Sc. Nils Büscher
- M.Sc Johann Peter Wolff
- Prof. Dr.-Ing. Christian Haubelt