TECHNISCHE UNIVERSITÄT MÜNCHEN
LEHRSTUHL FÜR INFORMATIONSTECHNISCHE REGELUNG
ORDINARIA: UNIV.-PROF. DR.-ING. SANDRA HIRCHE

October 15, 2021

B A C H E L O R T H E S I S
for
Shuyang Tian
Student ID 03709169, Degree EI

Quantifying Information Loss Resulting from Degradation of IMU Sensor Resolution in PD Symptom Classification

Problem description:

Parkinson's Disease (PD) is often characterized by movement abnormalities. Several existing solutions for continually monitoring these symptoms necessitate the use of expensive proprietary hardware for measuring motion signals that can, through data driven methods, indicate the PD symptom and its severity.
There is thus, a demand for more cost-effective solutions that can utilize low-cost sensors for measuring these signals. This work will investigate the viability of using such low cost sensors, which may in effect have lower resolution than their more expensive counterparts.
We will quantify the information loss that results from such degradation of IMU sensor precision on simulated data and validate our findings on different physical IMU Sensors.

Tasks:

- Literature review of methods for quantifying information loss
- Implementation/development of appropriate methods to quantify the information loss resulting from degrading precision of IMU sensor data.
- Inferring minimum specifications required of an IMU sensor for performance beyond a certain threshold

Supervisor:	MSc. Neha Das (neha.das@tum.de), Dr. Satoshi Endo (s.endo@tum.de)
Start:	22.10.2021
Intermediate Report:	03.02.2022
Delivery:	11.03.2022

(S. Hirche)
Univ.-Professor