Brno University of Technology
Faculty of Information Technology

Department of Intelligent Systems (DITS) Academic year 2020/2021

Bachelor's Thesis Specification

Student: **Ondris Ladislav**
Programme: Information Technology
Title: **Depth-Based Determination of a 3D Hand Position**
Category: Image Processing

Assignment:

1. Study the literature on hand detection and determining its position from depth images.
2. Design a suitable algorithm for detecting the hand, determining its position, and accepting the gesture (e.g., outstretched and fingers far apart).
3. Implement the proposed algorithm from point 2.
4. Acquire a database of at least 100 records. Use this database to test your solution from point 3.
5. Summarize the achieved results and discuss possible extensions or improvements.

Recommended literature:

- SUPANČIČ, James Steven, et al. Depth-based hand pose estimation: methods, data, and challenges. *International Journal of Computer Vision*, 2018, 126.11: 1180-1198.
- EROL, Ali, et al. Vision-based hand pose estimation: A review. *Computer Vision and Image Understanding*, 2007, 108.1-2: 52-73.
- BARSOUM, Emad. Articulated hand pose estimation review. *arXiv preprint arXiv:1604.06195*, 2016.

Requirements for the first semester:

- Items and 2.

Detailed formal requirements can be found at https://www.fit.vut.cz/study/theses/

Supervisor: **Drahanský Martin, prof. Ing., Dipl.-Ing., Ph.D.**
Head of Department: Hanáček Petr, doc. Dr. Ing.
Beginning of work: November 1, 2020
Submission deadline: May 12, 2021
Approval date: November 11, 2020