Comenius University in Bratislava
Faculty of Mathematics, Physics and Informatics

THESIS ASSIGNMENT

Name and Surname:	Bc. Dana Škorvánková
Study programme:	Applied Computer Science (Single degree study, master II. deg., full time form)
Field of Study:	Computer Science
Type of Thesis:	Diploma Thesis
Language of Thesis:	English
Secondary language:	Slovak

Title: Deep Learning-based Human Pose Estimation from 3D Data

Annotation: In recent years, the task of human pose estimation has become increasingly important, due to the large scale of usage, including VR applications, as well as higher-level tasks, such as human behavior understanding. Considering the high complexity of human body structure, machine learning approaches tend to outperform analytical methods. Even though most of the recent research is focused on RGB input data, depth data provide relevant additional information, which can increase the accuracy of the final estimation.

Aim: The main focus of the thesis is to present a deep learning-based method for 3D human pose estimation. By making use of 3D input data, we aim to overcome the limitations associated with highly non-linear regression from 2D data to 3D pose, and thus lower the estimation error. In order to develop a novel strategy, an extensive research in existing well-performing approaches is essential. The novel method should take a single depth map or other 3D representation of a human subject as input, and use a neural network to regress 3D body pose as output. The next goal is to evaluate the proposed approach using benchmark datasets and compare to current state-of-the-art.

Literature: Marin-Jimenez et al. 2018, 3D Pose Estimation from Depth Maps using a Deep combination of Poses, Journal of Visual Communication and Image Representation.

Moon et al. 2017, V2V-PoseNet: Voxel-to-Voxel Prediction Network for Accurate 3D Hand and Human Pose Estimation from a Single Depth Map, CoRR, abs/1711.07399.

Supervisor:	RNDr. Martin Madaras, PhD.
Department:	FMFI.KAI - Department of Applied Informatics
Head of department:	prof. Ing. Igor Farkaš, Dr.
Assigned:	25.09.2017
Approved:	03.10.2018

prof. RNDr. Roman Ďurikovič, PhD.
Guarantor of Study Programme

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Student Supervisor