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Vojtěch Pánek

Education

2020 – present **doctoral degree**, *Czech Technical University in Prague*
Czech Institute of Informatics, Robotics and Cybernetics
Computer Science
Supervisor: Dr. rer. nat. Torsten Sattler
Exploring non-standard environment representations for visual localization task, such as floor plans, 3D meshes or CAD models.

2018 – 2020 **master's degree**, *Czech Technical University in Prague*
Faculty of Electrical Engineering
Cybernetics and Robotics – Robotics

2015 – 2018 **bachelor's degree**, *Czech Technical University in Prague*
Faculty of Electrical Engineering
Cybernetics and Robotics – Robotics

Theses

Master's thesis **Visual Localization of Mobile Robot**
Survey of markerless global indoor visual localization methods and implementation of prototype of such system for robotic platform with monocular fisheye camera.

Bachelor's thesis **Map Import for Mobile Robot from CAD Drawing**
Implementation of converter from 2D CAD drawing of a building to NDT (Normal Distribution Transform) map representation, used for initialization of lifelong SLAM system.

Projects

2017 – 2020 **Hermes**, *CTU, CIIRC - RMP*
The project aims to implement a prototype of industrial transportation UGV with Clearpath Jackal as prototype platform. Involved in NDT map initialization from CAD floorplans (bachelor's thesis), global visual localization using monocular fisheye camera (master's thesis), navigation suite testing.

2020 **Pipetak**, *CTU, CIIRC - RMP*
Implementation of pipetting robot based on KUKA LBR iiwa industrial manipulator. The implemented system was used for preparation of samples for real-time PCR analysis (SARS-CoV-2) in hospital Na Bulovce in Prague. Involved in programming of hardware drivers for ROS (Robot Operating System), motion optimization and testing.

2019 **Doggo**, *CTU, FEE - AA4CC*
Construction of quadruped robotic platform following documentation provided by Stanford university. The project was running within Team Work course on Department of Control Engineering. Involved in mechanical and electrical assembly and implementation of motor control.

Achievements

2021-2022 **SGS (CTU Student Grant Competition)**
Achieved grant funding for two-year project *"Visual localization from low-definition maps"*.

2022 **IT4I National Supercomputing Center - Open Access Grant Competition**
Our project *Training Visual Features for Localization with Compact Environment Representations* achieved funding in the form of computation time on IT4I Karolina supercomputing cluster during the GPU Testing and Benchmarking special call of the 26th Open Access Grant Competition.

2023-2024 **SGS (CTU Student Grant Competition)**
Achieved grant funding for two-year project *"Visual localization using neural scene representations"*.

Teaching

2021 – 2023 **Geometry of Computer Vision and Graphics**, teaching assistant

2021 – 2023 **Digital Image**, teaching assistant

Publications

V. Panek, Z. Kukelova, T. Sattler. **Visual Localization using Imperfect 3D Models from the Internet**. In: IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR). 2023.

V. Panek, Z. Kukelova, T. Sattler. **MeshLoc: Mesh-Based Visual Localization**. In: European Conference on Computer Vision (ECCV). 2022.

V. Panek. **Visual Localization with Environment Outline Prior**. In: 26th International Student Conference on Electrical Engineering (POSTER). 2022.