

Vít Zeman

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Experience

- Graduate researcher**, Czech Technical University in Prague, Czech Institute of Robotics, Informatics and Robotics, Testbed for Industry 4.0; Prague, Czechia Since 2/2024
- **Research focus:** Computer vision and machine learning in industrial applications
 - As a member of a computer vision team, I collaborated on multiple projects and research papers
 - I specialized in deploying and creating state-of-the-art (SOTA) algorithms and methods in real robotic cells. My focus was on utilizing AI/ML for 2D detections and 6D Pose Estimation, primarily with RGB cameras. This involved extensive knowledge and application of intrinsic and extrinsic camera calibration. Additionally, I explored the use of Neural Radiance Fields and other novel implicit representation methods, as well as Large Language and Vision Models in industrial settings
- Intern - research**, Czech Technical University in Prague, Czech Institute of Robotics, Informatics and Robotics, Testbed for Industry 4.0; Prague, Czechia 7/2022-9/2022;
7/2023-12/2023
- **2023:** Deployed 3D reconstruction methods based on sets of RGB images of custom 3D-printed parts and PCBs for 6D Pose Estimation, based on the render-and-compare principle
 - **2022:** As a continuation of a teamwork project, I implemented computer vision algorithms into a Pick-and-Place cell, which consisted of an RGB-D camera, a conveyor belt, and a Kuka KR robotic manipulator

Education

- Czech Technical University in Prague**, Faculty of Electrical Engineering 7/2021 – 2/2024
- **Masters programme:** Cybernetics and Robotics
 - **Thesis:** Benchmarking 6D Object Pose Estimation for the Pick and Place Task
 - **Coursework:** Control Theory, Robotics, Artificial Intelligence, Computer Vision, Diagnostics and Sensors
- Czech Technical University in Prague**, Faculty of Electrical Engineering 9/2017 – 6/2021
- **Bachelors programme:** Cybernetics and Robotics
 - **Thesis:** News Article Layout Extraction from Bitmaps Files
 - **Coursework:** Control Theory, Robotics, Artificial Intelligence, Diagnostics and Sensors, Computer Architecture

Languages

- Czech:** Native speaker
- English:** Advanced
- FCE certificate (6/2016)
 - Primary communication language in a multilingual team

Publications

- Object Pose Estimation Using Implicit Representation For Transparent Objects** 9/2024
- Varun Burde, Artem Moroz, **Vít Zeman**, Pavel Burget
- Conference: ECCV24 TRICKY workshop
- DOI: TBD
- Automatic Workspace Calibration Using Homography for Pick and Place** 8/2023
- Varun Burde, David S. Martinez, **Vít Zeman**, Lars Kahlert, Tomas Jochman, Pavel Burget
- Conference: 2023 IEEE 19th International Conference on Automation Science and Engineering (CASE)
- DOI: 10.1109/CASE56687.2023.10260601

Additional Experience And Awards

Workshop Co-Host

4/2025

- 3D reconstruction from images and their application at Machine Learning Prague 2025 conference
- Workshop consisted of introduction camera intrinsic and extrinsic parameters, photogrammetry, Neural Radiance Fields and Gaussian splatting and their application.

Second Place, Porsche Engineering Student Contest 2023:

11/2023

- Participated in a team-based hackathon challenge aimed at autonomously controlling a sports car on a racing track to achieve the best lap time
- In addition to co-presenting the final solution, my contribution involved implementing a computer vision algorithm to detect the track, which provided input data for planning and the PID regulator used for car control

Technologies

Languages: Python, C++ , C, Julia, Matlab

Tools: Git, Anaconda/Mamba, SLURM, ROS, Docker

Hobbies

Technology: Following latest trends in technology, mostly about PCs and mobile devices.

Reading: Both scientific literature (papers) and fiction (Mostly sci-fi and fantasy)

Sports: badminton, cycling, swimming, ...