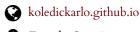
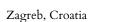
KARLO KOLEDIĆ

Computer Vision and Robotics Researcher







RESEARCH INTERESTS

My research is focused on applications of deep learning methods in state estimation and 3D perception for robotics Computer Vision: Monocular Depth Estimation, 3D Reconstruction, Domain Generalization, Multi-view Geometry Robotics: Sensor Fusion, Visual Odometry, SLAM, nonlinear optimization,

EXPERIENCE

Researcher

March 2021 - Present

Faculty of Electrical Engineering and Computing

Zagreb, Croatia

- Developed a novel visual odometry algorithm, outperforming all state-of-the-art methods on the KITTI dataset
- · Created a novel monocular depth estimation method, enabling generalization for arbitrary camera parameters
- · Coursework: Estimation Theory, Robotic Sensing, Perception and Actuation, Autonomous Mobile Robots
- Creating and conducting exams and exercises, mentoring students during projects and master theses

R&D student intern

Zagreb, Croatia

Visage Technologies AB

- Research and development of EKF/UKF with state constraints
- · Worked in a team focused on multiple object tracking for a major automobile company

Deep learning intern

RealÑetworks, Inc.

July 2018 - July 2019 Zagreb, Croatia

- Implemented face detection/face recognition networks in native CUDA/cuDNN/cuBLAS code. Achieved a 2.5 times faster performance than the TensorFlow CUDA implementation
- Implemented face detection algorithm for Android NDK using TensorFlow Lite
- · Research on various frequency and movement based techniques for face liveness detection
- Generated synthetic data in MakeHuman/Blender and implemented a face pose estimator in TensorFlow

EDUCATION

Ph.D. in Electrical Engineering and Computer Science University of Zagreb	Feb 2022 – Present
M.Sc. in Electrical Engineering (Robotics) University of Zagreb	Sep 2018 – July 2021
 Took additional 60 ECTS focused on machine learning and computer vision 	
Student exchange Politecnico di Milano	Sep 2019 – July 2020
B.Sc. in Computer Science University of Zagreb	Sep 2015 – July 2028

PUBLICATIONS

GenDepth: Generalizing Monocular Depth Estimation for Arbitrary Camera Parameters via Ground Plane Embedding

Karlo Koledić, Luka Petrović, Ivan Petrović, Ivan Marković under review in International Journal of Computer Vision (IJCV)

Moft: Monocular odometry based on deep depth and careful feature selection and tracking

Karlo Koledić, Igor Cvišić, Ivan Marković, Ivan Petrović 2023 International Conference on Robotics and Automation (ICRA)

Towards Camera Parameters Invariant Monocular Depth **Estimation in Autonomous Driving**

Karlo Koledić, Ivan Marković, Ivan Petrović 2023 European Conference on Mobile Robots (ECMR)

SKILLS

Programming: Python, C++, Java, MATLAB, bash Software: Linux, Git, Docker, Numpy, PyTorch, TensorFlow, CVX, ROS, OpenCV, CUDA, LaTeX, Eigen Languages: Croatian (native), English (C1-C2), German (B1)

AWARDS

Rector's Award for best project

Dental State Estimation using Deep Learning

- · Analyzed dental images to predict biological traits with the accuracy of 98% and age with a median error of 3 years.
- · Assessed dental state via object detection and classification