Luka Petrović

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RESEARCH EXPERIENCE

SEP. 2017 - PRESENT
Research and teaching assistant @ **UNIZG-FER**

Conducting research in robotics, especially trajectory optimization methods for robot motion planning in high-dimensional configuration spaces. My research relies on insights from stochastic optimization, batch state estimation and continuous stochastic processes.

MAR. 2018 - JUL. 2019
Researcher @ **ICENT**

Developing cyber-physical middleware for a mobile robot platform in the scope of a Horizon 2020 Innovation Action project *Logistics for Manufacturing SMEs (L4MS)*.

OCT. 2018 - NOV. 2019
Visiting researcher @ **KIT**

Researching robot motion planning methods in collaboration with Intelligent Process Automation and Robotics (IPR) laboratory led by prof. Björn Hein at Karlsruhe Institute of Technology (KIT).

EDUCATION

2017-NOW	**Ph.D candidate, Robotics** UNIVERSITY OF ZAGREB *Laboratory for Autonomous Systems and Mobile Robotics (LAMOR)*
2015-2017	**M.Sc, Electrical Engineering and IT** UNIVERSITY OF ZAGREB *Graduated with high honors (top 3%)*
2012-2015	**B.Sc, Electrical Engineering and IT** UNIVERSITY OF ZAGREB

AWARDS AND ACHIEVEMENTS

2017	**Bronze Plaque "Josip Lončar"** FACULTY OF ELECTRICAL ENGINEERING AND COMPUTING, UNIVERSITY OF ZAGREB *Awarded to the top 1% students during graduate studies.*
2017	**Scholarship for academic excellence** UNIVERSITY OF ZAGREB *Awarded for outstanding academic achievement.*
2016	**Rector's award** UNIVERSITY OF ZAGREB *Awarded for outstanding student research thesis titled 'Decentralized control of the multi-agent robotic system'.*

SKILLS

SOFTWARE	MATLAB, ROS, Latex, Python, C++, Simulink, Git, Linux
ENGINEERING	Motion planning, Control theory, Estimation theory, Machine learning, Deep learning
LANGUAGES	Croatian (native), English (C1), German (A2)

PUBLICATIONS

under review @ RAS
Geometry-Aware Singularity Avoidance for Articulated Robots using Riemannian Metrics

under review @ IEEE T-RO
Temporal and Extrinsic Multisensor Calibration via Gaussian Processes Moving Target Tracking

doi.org/10.1080/01691864.2020.1819874 @ AdvRob
Online Multi-Sensor Calibration Based on Moving Object Tracking

accepted @ IFAC WC 2020
Gaussian Processes Incremental Inference for Mobile Robots Dynamic Planning

doi.org/10.1016/j.robot.2020.103618 @ RAS
Cross-Entropy based Stochastic Optimization of Robot Trajectories using Heteroscedastic Continuous-time Gaussian Processes

10.1109/IROS40897.2019.8968441 @ IROS 2019
Fast Manipulability Maximization Using Continuous-Time Trajectory Optimization

10.1016/j.ifacol.2019.11.055 @ WROCO 2019
Open Platform Based Mobile Robot Control for Automation in Manufacturing Logistics

10.1109/ECMR.2019.8870970 @ ECMR 2019
Stochastic Optimization for Trajectory Planning with Heteroscedastic Gaussian Processes

10.1016/j.ifacol.2018.11.535 @ SYROCO 2018
Multi-agent Gaussian Process Motion Planning via Probabilistic Inference

10.1109/EDPE.2017.8123230 @ EDPE 2017
Self-learning Model Predictive Control Based on the Sequence of Controllable Sets

TEACHING ASSISTANT

UNDERGRADUATE	Computer-controlled systems (2017-now), Introduction to systems and automatic control (2017-2019), Computer architecture 1 (2018), Laboratory and skills - Matlab (2018)
GRADUATE	Machine learning (2019-now)

OTHER

SERVICE	**Reviewer for journals**: IEEE Access, IEEE RA-L **Reviewer for conferences**: IROS, ECC, IFAC WC, IFAC WROCO
MEMBERSHIPS	IEEE Student member