Filip Marić

"Understanding is but the sum of misunderstandings."
-Haruki Murakami

15.04.1993, Zagreb, Croatia
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Work experience

Jan. 2018 - Present

Graduate researcher @ **STARS Laboratory**

Researching applications of tools from computational algebraic geometry for manipulator kinematics, control, synthesis and motion planning.

Oct. 2018 - Apr. 2019

Subject matter expert @ **Coursera**

Developing assignments and materials for the Coursera state estimation specialization.

Jul. 2016 – Aug. 2016

R&D intern @ **Institute for Nuclear Technology**

Designing framework for computer vision algorithms used in robot manipulator localization. Developing in C# with OpenCV libraries and utilizing structural properties of nuclear plant.

Publications

arxiv.org/abs/1909.09318 @ ICRA 2020
Inverse Kinematics for Serial Kinematic Chains via Sum of Squares Optimization

arxiv.org/abs/1908.02963 @ IROS 2019
Fast Manipulability Maximization Using Continuous-Time Trajectory Optimization

arxiv.org/abs/1803.06406 @ ICRA 2018
Self-Calibration of Mobile Manipulator Kinematic and Sensor Extrinsic Parameters Through Contact-Based Interaction

10.1109/MIPRO.2016.7522303 @ MIPRO 2016
Robot arm teleoperation via RGBD sensor palm tracking - video

Awards and Achievements

2018 **UofT Joint Educational Placement**
University of Toronto
Fully funded international PhD collaboration with the LAMoR laboratory at the UZagreb.

2017 **Dr. Jasna Šimunić-Hrvoić scholarship**
University of Zagreb
Full financing for working on my Master's thesis at the University of Toronto.

2016 **Rectors award**
University of Zagreb
Awarded for best student scientific thesis.

2015 **Erasmus scholarship**
European Comission
Exchange scholarship awarded based on academic results.

Education

now **Ph.D candidate, Robotics**
University of Toronto
Space and Terrestrial Autonomous Robotics Systems (STARS) Laboratory

2017 **M.Sc, Electrical Engineering and IT**
University of Zagreb
Laboratory for Autonomous Systems and Mobile Robotics (LAMoR)

2017 **Graduate exchange**
University of Toronto
Institute for Aerospace Studies

2016 **Graduate exchange**
Aalborg Universitat
Department of Electronic Systems

Projects & Other

Thing mobile manipulator
Developing motion planning and control for the Thing mobile manipulator at STARS Laboratory.

Haptic feedback for the DaVinci surgical robot
Developing haptic feedback for minimally invasive surgery with DaVinci surgical robot and Geomagic touch haptic controller.

Kinematic Educational Robot (KER)
Open source, low-cost quadruped platform with ROS and simulation capabilities.

Software skills

Experienced	MATLAB, ROS, Simulink, Gazebo
Intermediate	C++, Python, Git, Blender, Linux
Basic	PCL, AutoCAD, ZMQ, emacs

Engineering skills

Experienced	Robotics, Control, Motion Planning
Intermediate	Estimation theory, Optimization
Basic	Microcontrollers, Machine learning

Language skills

English	Full professional proficiency (TOEFL: 109/120)
French	Elementary proficiency
Croatian	Native speaker

Other experience

Leading and working in large and small international teams

Presenting projects at international conventions, for reporters, investors