

Martin Matak

PhD Student at the University of Utah

<https://martinmatak.github.io>

EDUCATION

University of Utah, School of Computing (USA)

PhD in Computer Science

Aug 2019 – present

- Advised by Tucker Hermans

TU Wien (Austria)

MSc in Computational Intelligence / Logic and Computation

Oct 2016 – June 2019

- Advised by Georg Weissenbacher
- Thesis: *Attacks against Neural Networks* [PDF]
- Courses that were particularly interesting to me: *Machine Learning, Deep Learning in Visual Computing, Security in Machine Learning, Similarity Modeling, Introduction to NLP*

University of Zagreb, Faculty of Electrical Engineering and Computing (Croatia)

BSc in Computer Science

Sep 2013 – Jul 2016

- Thesis: *Data Processing with Technology Apache Spark*

PUBLICATIONS

- “Planning Visual-Tactile Precision Grasps via Complementary Use of Vision and Touch” [PDF]
Martin Matak and Tucker Hermans
IEEE Robotics and Automation Letters (RA-L) 2022
- “Comparing Piezoresistive Substrates for Tactile Sensing in Dexterous Hands” [PDF]
Rebecca Miles, Martin Matak, Mohanraj Devendran Shanthi, Darrin Young, Tucker Hermans
Preprint
- “Learning Continuous 3D Reconstructions for Geometrically Aware Grasping” [PDF]
Mark Van der Merwe, Qingkai Lu, Balakumar Sundaralingam, Martin Matak, Tucker Hermans
IEEE International Conference on Robotics and Automation (ICRA) 2020

WORK EXPERIENCE

NVIDIA, Seattle, US

Research Scientist Intern at Seattle Robotics Lab

May 2022 – Dec 2022

- Working on Geometric Fabrics for Dexterous Grasping.

Deloitte Digital, Vienna, Austria

Analyst (Software developer)

May 2018 – July 2019

- Part of the team that developed a loyalty program for a client.

Austrian Institute of Technology (AIT), Vienna, Austria

Data Science Intern

Oct 2017 – Feb 2018

- Investigated linkability of *monero* cryptocurrency.

CROZ d.o.o., Zagreb, Croatia

Software Engineering Intern

Jul 2016 – Oct 2016

- Worked on graph search through natural language (Croatian).

University of Zagreb, Faculty of Electrical Engineering and Computing, Croatia

Teaching assistant

Feb 2014 – July 2018

- Algorithms and Data Structures: Summer Semester (SS) '14, SS '15
- Introduction to Java Programming Language: SS '16, SS '18

SELECTED PROJECTS

Grasping Pipeline

Aug 2019 – now

- Generating grasps for a robot from only a partial view of the object. The project is under development.
- Tech stack: Python 2 and 3, ROS, PyTorch, C++
- Source: <https://bit.ly/3UfPDbE>

Adversarial Perturbations Against Deep Neural Networks

Jul 2018 – Apr 2019

- Trained several classifiers for human age estimation from the given image. Evaluated several white-box and black-box attacks against the classifiers. Developed a new black-box attack based on the existing state of the art algorithm. Some adversarial samples successfully tricked Microsoft service for age estimation.
- Tech stack: Tensorflow, Keras, and Python 3
- Source: <https://github.com/martinmatak/adversarial-framework>

Monero Linkability

Oct 2017 – Feb 2018

- This project is implementation of the paper: An Empirical Analysis of Linkability in the Monero Blockchain.
- Tech stack: Scala, Spark, and Google Cloud
- Source: <https://github.com/martinmatak/monero-linkability>

Neural Bird

Sep 2015 – Jan 2016

- Five of us developed a harder version of flappy bird and trained the agent (a neural network) to play better than human. My part was developing a neural network from scratch. More info about the project: <http://morgoth.zemris.fer.hr/data-repo/proj/1/>.
- Tech stack: Java
- Source: <https://github.com/martinmatak/NeuralBird>

ACHIEVEMENTS

| | |
|-----------------|---|
| Java | Part of a team where three of us won Code Quest - programming contest http://croz.net/news/odrzan-5-croz-code-quest |
| Learning skills | One of the two students in generation who received a <i>scholarship for outstanding students</i> (http://logic-cs.at/master/grants-and-scholarships/). |

ACADEMIC SERVICE

Reviewer for IROS 2021 and ICRA 2022.