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 – June 2024 (expected)

- Received research fellowship

TU Wien (Austria)

MSc in Computational Intelligence / Logic and Computation — Oct 2016 – June 2019

- Thesis: *Adversarial perturbations against deep neural networks*
- 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*
- completed optional courses *Introduciton to Java*, *Solving Optimization Problems Using Evolutionary Computation Algorithms in Java*, *Basic Use of Linux Operating System*

SELECTED PROJECTS

Adversarial Attacks for Quantized Neural Networks — Nov 2018 – present

- Exploring whether (and how) the quantization of neural networks impacts their adversarial robustness. Working with Rocco Salvia (University of Utah), Zvonimir Rakamaric (University of Utah), and Georg Weissenbacher (Vienna University of Technology).
- Tech stack: Tensorflow, Keras, and Python 3
- Source: `https://github.com/soarlab/AAQNN`

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`
- PDF report: `https://github.com/martinmatak/master-thesis/blob/master/thesis.pdf`

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`

WORK EXPERIENCE

Deloitte Digital, Vienna, Austria

Software developer — May 2018 – July 2019

- Developing a loyalty program for a client
  - Technologies used: Java, Oracle, Docker, Git, Linux

Austrian Institute of Technology (AIT), Vienna, Austria

Data science intern — Oct 2017 – Feb 2018

- I did the *monero-linkability* project mentioned above for them
  - Technologies used: Scala, Google Cloud Computing, Git, Linux

CROZ d.o.o., Zagreb, Croatia

Software Engineering Intern — Jul 2016 – Oct 2016

- worked on graph search through natural language (Croatian)
  - Technologies used: Java, Neo4j (NoSQL database) , React, Git, Linux

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

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 receive a *scolarship for outstanding students* (http://logic-cs.at/master/grants-and-scholarships/).

TECHNICAL SKILLS

Intermediate	**Java, Python, Linux, Git**
Basic	**Scala, Spark, Cloud Computing, C, PHP**