Toni Kukurin

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Education

University of Zagreb, Zagreb. *BSc and MSc* 2014 – 2017; 2017 – 2020
Focus on Machine Learning and Natural Language Processing. Relevant courses include AI, Machine Learning, Text Analysis and Retrieval, Deep Learning, Statistical Data Analysis, Computer Graphics, Database Systems and Advanced Algorithms.

Experience

Google Lens, Zurich. *Software Engineer Intern.* Jul 2019 – Sep 2019
I implemented various image augmentation techniques and setup experiments to train font style detection ML models. I refined the training approaches based on my discussions and collaboration with numerous other teams and researchers at Google.

Microsoft NLP Group, Redmond. *AI&R Intern.* Apr 2019 – Jun 2019
I implemented ML models and performed experiments focused on analyzing language understanding in cold-start and limited dataset settings. My work was mostly based around weak supervision and transfer learning approaches.

TakeLab, Zagreb. *R&D Intern.* Oct 2018 – Mar 2019
I investigated domain transfer in ML, with a specific focus on active learning and NLP. My responsibilities also included implementing a robust ETL pipeline and maintaining a production-level codebase to support existing ML models.

Microsoft Office 365, Redmond. *Software Engineer Intern.* Jul 2018 – Oct 2018
I engineered a topology builder service for testing hybrid (on-premise and cloud) Office 365 deployments. I composed a thorough design document and implemented the described solution using an internal C# microservice framework.

Self-employed, remote. *Freelance Software Engineer.* March 2018 – Jul 2018
As a freelancer, I extracted and implemented software solutions for smaller-sized clients across the world spanning different business domains. I independently assessed clients' problems and proposed relevant solutions based on their individual needs.

Google Play, London. *Software Engineer Intern.* Jul 2017 – Jan 2018
I designed and developed new features for the Google Play back-end and on the Android client. My effective investigation of the code architecture and cross-team communication reduced friction in adopting solutions to Google's infrastructure.

Infobip, Zagreb. *Software Engineer Intern.* Jul 2016 – Oct 2016
I architected the Facebook Messenger service, implemented various new features on the back-end and analyzed service performance. In my first month of employment I discovered a resource leak causing major problems for one of the production services.

Select Projects

3D to Lego I've devised and implemented an algorithm which (1) parses 3D models from .obj files, (2) places the objects in a spatial grid, (3) populates the grid using standardized bricks based on the LegoDraw spec and (4) outputs the original 3D model assembled as a Lego figure. *In Python.*

Fake News Detection I have researched and reimplemented existing approaches for fake news detection. While mainly DL-based, the project also involved significant engineering work in scraping online data and running pre-trained models from Docker images. *In Python (SKLearn, ScraPy, Gensim, Keras) and Docker.*

Question Answering I've published a research paper in a team of 4 describing our results building ranking SVM and Neural-based classifiers for question-answering. My main responsibilities included exploring current SOTA, building the feature extraction pipeline, training and evaluating SVM models. *In Python (SKLearn, NLTK).*

Eventing I led a team of 7 in building an eventing web service. My responsibilities included architecting the entire system, deployment to a webserver and advising the client-side Android developers. *In Java (Spring), Linux (nginx).*

2D Computer Graphics I came up with and implemented self-generating student assignments for *Interactive Computer Graphics*. The assignments primarily test students' foundational knowledge of linear algebra. *In JavaScript (WebGL).*

Online debates Upon researching the SOTA, I devised and evaluated experiments for automated stance classification in online debates. Due to a relatively small dataset, my solution was based on traditional Machine Learning and involved significant manual feature extraction and analysis. *In Python (SKLearn, NLTK, SpaCy).*

DNA mapping I researched and implemented a MinHash-based method for approximate mapping of long DNA strands to large reference databases. *In Java (Guava).*

HTTP Server with templating engine As a self-learning project, I used Java networking primitives to implemented a HTTP server framework. I also built a custom templating language parser from the ground-up, with support for usual operations such as variable assignment, loops and conditional statements. *In Java.*

Machine Learning and Deep Learning As a self-learning project, I implemented foundational ML and DL algorithms in Python using the SciPy stack. I analyzed behavior and pitfalls of various ML techniques. *In Python (PyTorch, TensorFlow, Keras, SKLearn, NLTK, SciPy, NumPy).*

Skills

Python, Java, JavaScript, Linux, Git(Hub). Various back-end frameworks (*NodeJS, Spring, Django*). Scientific computing and ML Python libraries (*PyTorch, Pandas, NumPy,...*). Honorable mentions: *Kotlin, Android, Swift, C++, Haskell,...*

Hobbies

Guitar and piano. Pub quizzes. Exercise. Cooking. Having too much fun hacking my i3 and Vim. Following psychology, cognition, urban planning and medicine research.