

Toni Kukurin

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EDUCATION	<p>University of Zagreb, Zagreb. <i>BSc and MSc</i> 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. BSc <i>Claim and Stance Classification in Online Discussions Using Machine Learning</i>; MSc <i>Structured Deep Learning with Graph Neural Networks</i>.</p>
WORK EXPERIENCE	<p>Google Lens, Zürich. <i>Software Engineer Intern.</i> Jul 2019 – Sep 2019 I devised a POC for font style detection from raw images. This involved researching and formalizing the problem, obtaining data, setting up an annotation scheme and interface, and implementing an autoencoder ML model in TensorFlow. I refined the optimization approaches based on my discussions and collaboration with a number of Google researchers. I implemented minor features in the Google Lens C++ codebase.</p> <p>Microsoft NLP Group, Redmond. <i>AI&R Intern.</i> Apr 2019 – Jun 2019 My work was primarily focused on analyzing weak supervision and transfer learning approaches for cold-start natural language understanding from limited datasets. I have implemented transformer models in PyTorch and leveraged the Snorkel framework to augment their training procedures using hand-crafted feature engineering. I presented a thorough result analysis at the end of my internship.</p> <p>TakeLab, Zagreb. <i>R&D Intern (part-time)</i>. Oct 2018 – Mar 2019 I investigated domain transfer with a specific focus on active learning for sentiment analysis in NLP. This involved analyzing an existing traditional ML model, researching promising active learning approaches and setting up an imitation learning framework to retrain the model for new domains. My work also included implementing a robust ETL pipeline and maintaining a back-end serving the productionized models.</p> <p>Microsoft Office 365, Redmond. <i>Software Engineer Intern.</i> Jul 2018 – Oct 2018 I familiarized myself with Azure cloud networking primitives and engineered a topology builder service for testing hybrid (combined on-premise and cloud) Office 365 deployments. I composed a thorough design document and implemented the proposed solution using an internal C# microservice framework.</p> <p>Self-employed, remote. <i>Freelance Software Engineer.</i> March 2018 – Jul 2018 As a freelancer, I extracted and implemented software solutions for early-stage startups and clients spanning different business domains. I assessed clients' problems, devised, and implemented relevant solutions based on their individual needs.</p> <p>Google Play, London. <i>Software Engineer Intern.</i> Jul 2017 – Jan 2018 I architected 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 helped expedite feature roll-out into Google's infrastructure.</p> <p>Infobip, Zagreb. <i>Software Engineer Intern.</i> Jul 2016 – Oct 2016 I architected the Facebook Messenger service, implemented various new features on the back-end and analyzed service performance. I independently discovered a major bug causing significant problems for one of the company's public services.</p>

SELECT
PROJECTS

3D Object to Lego Converter As a one-off freelance project, I devised and implemented an algorithm which parses 3D models from .obj files and converts them to Lego figures based on the LegoDraw specification and some geometry. *In Python.*

Structured Deep Learning with Graph Neural Networks My master's thesis involved coming up with a graph neural network model for self-supervised language grounded representation learning and applying it to a downstream reinforcement learning task. *In Python (PyTorch, NumPy, SciPy, Gym).*

Claim and Stance Classification My bachelor's thesis involved researching the field of argumentation mining, devising, and evaluating a ML system for automated debate analysis. The solution was based on traditional ML which involved significant feature engineering and statistical feature analysis. *In Python (SKLearn, SpaCy).*

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

Full-stack web service I freelanced as the lead developer for a US startup. My work involved architecting and implementing features for their existing web service built in NodeJS and Django. *In JavaScript (NodeJS), Python (Django), Linux (nginx).*

ETL pipeline I freelanced for a small US startup working in the space of ETL tools. My work primarily focused on devising core data extraction algorithms and integrating them into a large existing codebase. *In Python (Django), Docker.*

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

SKILLS

Proficient in **Python, Java, JavaScript, Linux**. Familiar with various back-end frameworks (*Node, Spring, Django*), common scientific and ML Python libraries (*PyTorch, NumPy & similar*). Working knowledge of various other languages & tools.

HOBBIES

Music. Pub quizzes & stand-up. Exercise. Cooking. Having too much fun hacking my i3 and Vim configs. Research in psychology, cognition, urban planning and medicine.