



Kaloyan Rusev

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Education

MEng Computer Science, University College London

Sep 2019 – Jun 2023

Grade: First Class Honours

- Master's Project: Safe Model-based RL with Neural Network Ensembles (Advisor: Prof. Marc Deisenroth)
- Relevant modules: Supervised Learning, Deep Representation and Learning, Machine Learning for Visual Computing, Statistical NLP, Reinforcement Learning, Robotic Systems, Multi-agent AI, Distributed Systems and Security

High School Diploma, Sofia High School of Mathematics

Sep 2014 – Jun 2019

Grade: 5.93 / 6.00 (A*A*A equivalent)

Experience

Software Engineer, Samsara

Sep 2023 – Present

- After completing a successful internship, returned as a full-time employee in the Global Compliance team
- Part of the team's re-architecting efforts for the US and Canada parts of the compliance system, as well as solving high-priority issues for our customers

Postgraduate Teaching Assistant, University College London

Sep 2023 – Present

- Guiding and supporting master's students as a Teaching Assistant for UCL's "Real-world Multi-agent Systems" module, assisting in the deployment and optimization of AI models on wheeled robots
- Facilitating a dynamic, hands-on learning experience, troubleshooting AI model deployments, and providing strategic recommendations for improved performance in a collaborative hackathon-style lab environment

Machine Learning Engineer, Stealth Start-up

May 2023 – Jul 2023

- Led the development of a Large Language Model by selecting the optimal open-source LLM, fine-tuning it and optimising it for diverse topic conversations using advanced natural language processing techniques
- Developed and implemented machine learning recommendation algorithms, incorporating the latest research in collaborative and item-item filtering to deliver highly personalized content and product recommendations

Research

Safe Model-based RL with Neural Network Ensembles (Advisor: Prof. Marc Deisenroth)

Sep 2022 – Jun 2023

- Developed a novel extension to the PETS algorithm that addresses the common safety issue in RL algorithms of violating safety constraints during the early exploration stage, through progressive action range expansion
- Empirically showed that the slower the action space is expanded, the safer the exploration stage is, but the more time is needed until an optimal solution is found

Computer-understandable Legal Specifications (Advisors: Dr. Martin Schoernig, Prof. Philip Treleaven)

Oct 2021 – May 2023

- Designed and implemented a system for automatic compliance checking that allows legal experts to create data models for representing legal documents, and law firms and legal in-house teams to manually map a document to the created models
- Developed a BERT-based model for named-entity recognition of the 6 most common entities in legal documents, for semi-automatic mapping, achieving an f1-score of 0.724
- Experimented with models with different architectures and configurations, as well as increasing the dataset from 100,000s to 1,000,000s of datapoints to further improve the accuracy of the automatic mapping, achieving an f1-score of 0.878

JavaScript & Python Coding Style Compliance on Stack Overflow (Advisor: Dr. Jens Krinke)

Jan 2022 – Sep 2022

- Investigated and compared code style compliance of 3.4 million Python and JavaScript snippets from Stack Overflow, against Pylint's and ESLint's standard style guides respectively
- Compiled a report showing that ~80% of all snippets include at least one violation, and that the total number of violations can be reduced by ~58% by applying an autoformatter
- Provided evidence that studies which use Stack Overflow snippets for Machine Learning purposes should carefully consider the code style compliance of these snippets and apply autoformatting prior to their use to reduce the risk of learning incorrect or poor coding practices

Skills

- **Languages:** Java, C / C++, Python, Go, JavaScript, TypeScript, Haskell
- **Tools & Frameworks:** PyTorch, TensorFlow, Jax, Scikit-learn, MySQL, Git, Docker, Linux, AWS, HTML, CSS