Andrei Rusu

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Experience

University of Southampton, PhD in Computer Science and Student Ambassador — Southampton, UK · Sep. 2019 to Feb. 2024

- Published two journal studies and an award-winning conference paper on data-driven epidemic modeling and control. Thesis: An inquiry into diffusion processes over interaction networks 🔗.
- Designed an efficient graph neural network architecture and a reinforcement learning pipeline to derive highly effective and explainable policies for testing, tracing, and vaccination in epidemics, increasing their simulated impact by margins of up to 50% when compared to standard strategies.
- Authored a research report on the potential of language models to be used in conjunction with system biology models to detect neoantigenic peptides for developing cancer vaccines.
- Mentored, supervised, and demonstrated labs for pupils, undergraduate and postgraduate students on several topics, including deep learning, data science and software engineering.

Continental Automotive, Software Developer, Intern — Iasi, Romania · Jul. 2018 to Sep. 2018

- Contributed to a successful interdepartmental research project aimed at comparing the four major cloud providers in terms of their natural language understanding engines.
- Built an Android chatbot for drivers with Google Dialogflow and text-to-speech integration, capable of answering queries about the traffic, location or weather at 20% of the cost of other providers.

J.P. Morgan Chase & Co., Technology Analyst, Intern — London, UK · Jun. 2017 to Jun. 2018

- Worked alongside middle-office and traders to implement and maintain dependable risk management tools, some of which lead to 25% improvements in the reporting time.
- Acquired a clear understanding of OOP design and Agile workflows by developing features for the Kapital platform, a critical risk management with hundreds of users.

Akixi Ltd., Web and Java Developer, Intern — Crawley, UK · Jun. 2016 to Sep. 2016

- Developed a utility for on-demand compilation of JSP files, offering our users the option to generate personalized PDF documentation based on the help pages of our call reporting application.
- Created an application for testing Java Servlet services that became widely used in the company, reducing the time spent on manual testing environment configuration by more than 30%.

Education

University of Southampton, BSc in Computer Science with Industrial Studies — Sep. 2015 to Jul. 2019

- First Class Honours with the average grades 84% (1st year), 84.75% (2nd year), and 85.5% (3rd year).
- Achieved the Netcraft Ltd. prize for ranking in the top 10 of my cohort according to marks.
- Individual Project: Exploring VAEs in the context of image generation 🔗.

Publications

EpiCURB: Learning to derive epidemic control policies — Oct. 2023

A. C. Rusu, K. Farrahi, M. Niranjan

10.1109/MPRV.2023.3329546 🔗 (IEEE Pervasive Computing - In Press 🔗)

Flattening the curve through reinforcement learning driven test and trace policies — Dec. 2022

A. C. Rusu, K. Farrahi, M. Niranjan

10.1007/978-3-031-34586-9_14 🔗 (EAI PervasiveHealth)

Modelling digital and manual contact tracing. Are low uptakes and missed contacts deal-breakers? — Oct. 2021

A. C. Rusu, R. Emonet, K. Farrahi

10.1371/journal.pone.0259969 🔗 (PLOS One)

Recent Projects

LLM applications Jan. 2024
- Developed several chatbot applications for retrieving information from documents and the web.
- Used Python (LangChain, Streamlit), Java (Android), JavaScript (Google Cloud). Details ⬈, ⬈.

Agents for controlling diffusion processes Jun. 2023
- Engineered several agents that can rank nodes in a graph for directing public health interventions.
- Used Python (PyTorch, PyTorch Lightning, scikit-learn), Bash scripting, SLURM. Details ⬈.

IBMF epidemic simulator Nov. 2021
- Implemented a network-based simulator for diffusion processes that is highly customizable and can be used to model and visualize the spread of complex pathogens such as SARS-CoV-2.
- Used Python (Pandas, NetworkX, PyMC), Bash scripting, SLURM. Details ⬈.

Additional Experience And Awards

Complete Guide to Power BI for Data Analysts by Microsoft Press (2024): Received certificate for completing the Power BI course.

Best Paper Award at EAI PervasiveHealth (2022): Awarded for our contribution to reinforcement learning and epidemic control.

Bloomberg Market Concepts (2018): Received certificate for finishing the BMC course, which covers topics in financial markets.

3rd place at the Continental Hackathon Bug Hunt (2018): Traced and fixed data-retrieving bugs in a TomTom navigation platform.

2nd place at the J.P. Morgan Intern Hackathon (2017): Developed a data-centric PHP application for a charity organization.

Marketing Executive (2016 - 2017): Responsible for the marketing strategy and the digital content of HackaSoton, a student society that organizes the annual hackathons at the University of Southampton.

Technologies

Languages: Python, Java, MATLAB, JavaScript, C/C++, Smalltalk, Bash, SQL.

Software: VS Code, Jupyter, Azure Machine Learning, Google Dialogflow, Android Studio, Microsoft 365 (incl. Power BI).

Databases: MySQL, PostgreSQL, Azure Cosmos DB, MongoDB, Qdrant.