

Andrei Rusu

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Profile

Microsoft-certified Data Scientist Associate with a PhD in the field and background in applying machine learning solutions to various data modalities, including network, image, text and proteomics data. Authored publications in reputed journals and conferences on Epidemic Modeling, Reinforcement Learning and Graph Neural Networks. Experienced in several AI frameworks and MLOps tools, including Azure Machine Learning, PyTorch, Spark or LangChain. Demonstrated capabilities in software engineering and stakeholder management both in academia and industry. Excellent collaboration skills, with a proven track record in multidisciplinary teams.

Experience

University of Southampton, PhD in Data Science and Lead Student Ambassador

Southampton, UK
Sep. 2019 to Dec. 2023

- Published two journal articles and received the Best Paper Award for a conference publication on deep learning for epidemic control. Thesis: [An inquiry into diffusion processes over 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 mechanisms by which large language models can be integrated 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

London, UK
Jun. 2017 to Jun. 2018

- Worked with middle-office and traders to implement and maintain dependable risk management tools in Python and Smalltalk, 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 system 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 clients the option to generate personalized PDF documentation based on the help pages of our call reporting application.
- Created a platform 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 being in the top 10 students of my cohort according to marks.
- Individual Project: [Exploring VAEs in the context of image generation](#) [🔗](#).

First-Author Publications

EpiCURB: Learning to derive epidemic control policies

Oct. 2023

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

[10.1109/MPRV.2023.3329546](https://doi.org/10.1109/MPRV.2023.3329546) [🔗](#) (IEEE Pervasive Computing)

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
<ul style="list-style-type: none"> Developed RAG chat applications for interacting with information from documents and web pages. Used Python (LangChain, Streamlit), Java (Android), JavaScript (Google Cloud Functions). 	
Agents for controlling diffusion processes	Jun. 2023
<ul style="list-style-type: none"> Designed deep learning agents that can rank nodes in a graph for directing health interventions. Used Python (PyTorch, PyTorch Lightning, scikit-learn), Bash scripting, SLURM. 	
IBMF epidemic simulator	Nov. 2021
<ul style="list-style-type: none"> 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. 	

Additional Experience And Awards

Azure Data Scientist Associate (2024): Certified by Microsoft for demonstrating the ability to develop ETL data pipelines, train models with Azure Machine Learning or Azure Databricks, and deploy them in the cloud.

Active participation in AI research groups and conferences (2019 - 2024): Contributed to discussions on the ethical implications of AI and the role it plays in public healthcare and drug discovery across several venues, including AI4SD events, NeurIPS and ICLR.

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.

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

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

Technologies

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

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

Databases: MySQL, PostgreSQL, MongoDB, Qdrant, Neo4j.