Teodora Reu

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EDUCATION

UNIVERSITY OF OXFORD
Doctor in Philosophy in Computer Science | 2023-2026

Focus on *Geometric Deep Learning*, *GNNs*, and *Diffusion Models*. Supervised by DeepMind Chair of AI *Professor Michael Bronstein*.

UNIVERSITY OF CAMBRIDGE
Master of Philosophy in Computer Science | 2022 -2023

Distinction with 79% and with 81% titled thesis: *Reimagining Graph Topology Variational and Attentional Approaches*. Published coursework in Denoising Diffusion Models on Expressiveness Remarks for Samplers.

UNIVERSITY OF MANCHESTER
Bsc. Computer Science and Mathematics | 2019-2022

Awarded 1^{st} class. Thesis titled *Graph Neural Networks for Cancer Data Integration*. Focus on Machine Learning modules (Artificial Intelligence, NLP), Probability and Statistics (Stochastic Calculus), Abstract Mathematics (Group Theory, Topology, Linear Algebra).

SKILLS

PROGRAMMING
• Python • Torch • Tenserflow • C++ • Java • Go • Git • Unix • JS

INTEREST
• Singing • Painting • Table Tennis • Chess • Writing • Photography

TEACHING
Taught at various mathematical camps such as PROMYS in Oxford and National Mathematical in Romania.

AWARDS

• **Finalist at National Olympiad of Mathematics** (2017 and 2018).
• **First and second place at Regional Robotics Competitions** (2017 and 2018) - built a robot able to move autonomously and humanly controlled (implemented in **Android Studio with Java**).

WORKING EXPERIENCE

PROMYS | Counsellor
15 July 2023 – 12 August 2023 | University of Oxford

- Teaching Number and Group Theory to International Mathematics Olympiad level high-school students.
- Run seminars on Random Graphs and Lie Groups and Lie Algebras.

BLACKROCK | Aladdin Software Engineering Intern
22 June 2022 – 12 August 2022 | London

- Achieved proficiency in **Angular** services, promises, testing methods, and **protocol buffers**.
- Contributed to a corporate code base in Agile ways, and releasing into production developed features.

R3 | Software Engineering Intern
21 June 2021 – 10 September 2021 | London

- Implemented and tested flow and smart contracts in **Kotlin** for the trade team which digitizes the Bill of Lading in NFTs.
- Collaborated with project management team to align on requirements.
- Obtained the **Corda Cerification** and learned about block-chain and decentralized distributed ledger technologies.

GOOGLE | STEP intern
6 July 2020 – 26 September 2020 | Remote

- Developed a social web app (called ChosenOne) in **Python, TypeScript & Go**, matching users based on their photo galleries using **k-NN with cosine distance** and leveraging Cloud Vision API.
- Implemented the app's UI in **Angular**: profile pages, a feed, and chat rooms, and wrote the back-end for chat rooms in **Go**.
- Developed a Portfolio app with a gallery, blog and comments section polling data from Google Cloud Storage.

PUBLICATIONS

- **Expressiveness Remarks for Denoising Diffusion Models and Samplers** (Advances in Approximate Bayesian Inference 2023) - Francisco Vargas, **Teodora Reu**, Anna Kerekes.
- **CIN++: Enhancing Topological Message Passing** - Lorenzo Giusti, **Teodora Reu**, Francesco Ceccarelli, Cristian Bodnar, Pietro Lió

SELECTED PROJECTS

- **Variational and Attentional approaches to Graph Rewiring - 2023** Exploring two pipelines for learning new adjacency matrices for graphs such that the flow of information is enhanced. Worked with Graph Transformers.
- **Using Bayesian Optimisation to find Stable Celestial Systems - 2023** Searching for stable n-body systems, and generalizing a class of such syestems.
- **Graph Neural Networks for Breast Cancer Data Integration - 2022** Building graph structure on breast cancer data, and applying GNN in an unsupervised environment to generate low-dimensional embeddings from combined data.
- **Sentiment analysis based on people comments in forums - 2022** Integrating various source written information to enhance sentiment prediction on Reddit posts.
- **Euler's Identity and Church Ceilings - 2018** Generated Mandelbrot looking like pictures from Euler's Identity.