KEVIN KERMANI NEJAD

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EDUCATION

University of Oxford, UK-Oxford *October 2023 - March 2025*
PhD - Department of Physiology, Anatomy & Genetics
Neural and Machine Learning Group

University of Bristol, UK-Bristol *September 2020 - August 2023*
PhD - UKRI Centre for Doctoral Training, Interactive Artificial Intelligence
Neural and Machine Learning Group

The University of Edinburgh, UK-Edinburgh *September 2019 - August 2020*
Master of Science (MSc), Computational Applied Mathematics **Distinction**
Dissertation Title: Acceleration of Statistical Sampling with Application to Machine Learning

King's College London, UK-London *September 2016 - July 2019*
Bachelor of Science (Hons), Computer Science (Artificial Intelligence). **First Class Honours**
Dissertation Title: Personalised Deep Neural Network for Activity Recognition Using Transfer Learning

INTERNSHIPS

Research internship - University College London *July 2023 - December 2023*
Supervisor: Prof. Bradley Love
project: *BrainGPT (LLM to assist neuroscientific research)* link

- part of the technical team in the development of a specialized GPT-style language model for neuroscience research, ensuring the project aligns with cutting-edge AI advancements.
- Oversaw and participated in the data collection process, conducting thorough reviews and inspections of each data point to maintain high-quality standards.
- Actively involved in the creation of a benchmark for the project, with an associated research paper soon to be published.
- fine-tuned open-source language models, particularly focusing on llama.2 models, to suit project-specific needs.
- Conducted extensive performance testing on various models to identify the most effective solutions for neuroscience experiment design.

Research Scholar - New York University *June 2022 - August 2022*
Supervisor: Dr. David Schneider
Project: *Learning in Auditory Cortex*

- Awarded the UKRI UK-US collaboration scheme fund for a 3-month research program focusing on a joint research initiative between UK and US universities.
- Gained hands-on experience in experimental neuroscience, including observing experiments on mice and learning to analyze noisy experimental data.
- Collaborated closely with the group to explore the application of deep learning and artificial neural networks (ANN) as models of the auditory cortex.
- Implemented ANN models of the auditory cortex, successfully capturing prediction error signals observed in experimental data.

- Developed a comprehensive understanding of experimental neuroscience techniques, enhancing skills in data analysis and model implementation.

Research Internship - King's Centre for Robotics Research *July 2019 - September-2019*
Supervisor: Dr Brendan Michael
project: *Transfer Learning Between Fabric-Embedded and Body Sensors*

- Built data collection apparatus, collected Fabric data in laboratory and prepared data for analysis
- Designed and implemented a CNN architecture for classification and transfer learning using TensorFlow library
- Analysed and compared the robustness, generalisability and transferability of fabric-embedded and body sensors

River and Mercantile Asset Management, London UK *June 2017 - September 2017*
Data Intern

- Created the foundation of market data ETF (Extract, Transform and Load)
- Created individual reports for Operation team using store procedure and SSRS
- Created t-SQL unit test to ensure valid data in both live and staging tables, this involved everything from missing data checking, SEDOL and ISIN validation to creation of outlier detector

LANGUAGES & TECHNOLOGIES

- Python, R, Numpy, Pandas, SciPy, OpenCV, NLTK, spaCy
- PyTorch, TensorFlow , JAX
- Amazon Web Service, Google Cloud, Azure
- Java, JavaScript, MATLAB, GraphQL, Docker
- SQL, MySQL, t-SQL, SSRS

AWARDS & HONOURS

- David Walsh Scholarship
- Digital Health Innovation Prize
- National Computer Olympiad, Semi Final
- National Physics and Astronomy Olympiad, Semi final
- The Youngest Inventor in Iran (**Patent: Industrial and Home Installations Control and Monitoring via SMS**)
- 3rd Place in 10th Khwarizmi Youth Festival (National Innovation Festival)
- Recipient of Fellowship of National Elite Foundation of Iran
- Winner of the LV Insurance Datathon prize for causality and moderation analysis
- Winner of the AMoC (Advanced Modelling of Cyber Criminal Careers) Hackathon among teams from top UK and EU universities
- Silver medal in Kaggle competition (*GoDaddy - Microbusiness Density Forecasting* - Team lead)

COMMUNITY ENGAGEMENT AND LEADERSHIP

- Mentor at Indaba Mentorship program aims to strengthen the African Machine Learning (ML)

- Kaggle team lead at University of Oxford (OxAI - Oxford Artificial Intelligence Society)

TEACHING ASSISTANCE

Software Development: Programming and Algorithm (EMATM0048), Information Processing and the Brain (COMSM0075), Computational Neuroscience (COMS30017), Machine Learning (COMS30035), Applied Linear Algebra (EMAT20012)

PUBLICATIONS

- AI-driven cholinergic theory enables rapid and robust cortex-wide learning. **COSYNE 2023**
M. Filipovica M.Nejad, R.P.Costa
- Self-supervised learning in neocortical layers: how the present teaches the past. **COSYNE 2022**
M.Nejad, D.Pedamonti, P.Anastasiades, R.P.Costa
- Division versus subtraction: task-specific gating in recurrent neural networks. **COSYNE 2021**
M.Nejad, M.Montero, A.Khwaja, R.P.Costa

REFERENCE

Dr Rui Ponte Costa (University of Oxford) rui.costa@dpag.ox.ac.uk
Dr David Schneider (New York University) ds5577@nyu.edu
Prof. Peter Flach (University of Bristol) peter.flach@bristol.ac.uk