Upamanyu Ghose

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Education

PhD in Psychiatry, University of Oxford (2023-present)

- **Scholarship:** Alzheimer's Research UK Studentship
- **Research:** Applying machine learning models to whole genome sequencing and gene expression data to identify and understand the functional effect of genetic variation associated with Alzheimer's disease

MSc in Computer Science, University of Oxford (2019-2020)

- **Scholarship:** Oxford Weidenfeld-Hoffmann Scholarship
- **Degree award**: Distinction
- **Key modules**: Advanced Machine Learning, Computational Biology, Computational Game Theory

BTech in Computer Science and Engineering, Manipal Institute of Technology (2015-2019)

- **CGPA**: 9.86/10.0
- **Key modules**: Machine Learning, Software Engineering, Data Structures and Algorithms

Experience

Research Assistant - Department of Psychiatry, University of Oxford (2020-2023)

- Developed a machine learning method to identify novel genes associated with Alzheimer's disease and type II diabetes in the UK Biobank (*first author publication*)
- Facilitated co-author publications on evaluating language models for biomedical data, and developing a proteomic aging clock
- Co-supervised master's students on research projects
- Conducted seminars on Python programming and machine learning at the summer school of King Abdulaziz University and the University of Oxford Centre for Artificial Intelligence in Precision Medicine
- Assembled and maintained the lab's servers for deep learning and bioinformatics analyses

Research Intern - Nanyang Technological University, Singapore (2018-2019)

- Developed PyTrack, an open-source Python toolkit to analyse eye-tracker data (*first author publication*)
- Led the data collection for studying emotions using eye-tracker sensors

AI Team Member - Project Manas, Manipal Institute of Technology (2017-2018)

- Implemented a deep learning based semantic segmentation algorithm to help navigate a driverless vehicle
- Represented the team as a TEDx speaker

Volunteer - Teach Code for Good (2017-2018)

- Led the academic planning and curriculum for teaching mathematics and computer programming to underprivileged school children in Manipal, India

Publications

- **Ghose U**, Sproviero W, Winchester L, Fernandes M, Newby D, Ulm BS, et al. Genome wide association neural networks (GWANN) identify novel genes linked to family history of Alzheimer's disease in the UK Biobank. medRxiv (*Accepted for publication in Briefings in Bioinformatics – https://doi.org/10.1093/bib/bbae704*)
- Taylor N, **Ghose U**, Rohanian O, Nouriborji M, Kormilitzin A, Clifton DA, et al. Efficiency at scale: Investigating the performance of diminutive language models in clinical tasks. Artificial Intelligence in Medicine. 2024
- Argentieri MA, Xiao S, Bennett D, Winchester L, Nevado-Holgado AJ, **Ghose U**, et al. Proteomic aging clock predicts mortality and risk of common age-related diseases in diverse populations. Nature Medicine. 2024
- **Ghose U**, Srinivasan AA, Boyce WP, Xu H, Chng ES. PyTrack: An end-to-end analysis toolkit for eye tracking. Behav Res Methods. 2020

Skills and interests

- **Programming languages:** Python, R, Bash
- **Machine learning frameworks:** PyTorch, Huggingface, Scikit-learn, LightGBM, SHAP
- **Languages:** English, Bengali, Hindi
- **Sport:** Captain (2024-present), rower and coxswain for the Green Templeton Boat Club
- **Music:** Singer in the Green Templeton College Choir