Avish Vijayaraghavan

Translational Machine Learning for Precision Medicine

av1017@ic.ac.uk • avishvj.github.io • linkedin.com/in/avish-vijayaraghavan/

EDUCATION

Imperial College London — London, UK
PhD Candidate in AI for Healthcare — Oct 2021 - Present

- Working on multimodal, interpretable learning for idiopathic pulmonary fibrosis, supervised by Joram M. Posma, Philip Molyneaux, Daniel Muthas, and Tim Ebbels.
- Part of the third cohort for the AI4Health CDT programme. Funded by UKRI and AstraZeneca.
- CDT representative for '22/23 and 23'/24.

University College London — London, UK
MSc in Precision Medicine (Distinction) — Sept 2020 - Sept 2021

- Final Project: 3D Graph Representation Learning for Transition State Generation, supervised by Brooks Paige. Code here.
- Finished on Dean's List as highest performing student on course.

Imperial College London — London, UK
BEng in Mathematics and Computer Science (First Class Honours in final year) — Sept 2017 - July 2020

- Final Year Group Project: Cryptocurrency Exchange Platform for Bitcoin and Ethereum.
- Final Year Individual Project: Data Science for DLBCL Stratification, supervised by Elsa Angelini. Code here. Presentation featured on Department of Computing's YouTube channel.

WORK EXPERIENCE

Microsoft Research — Cambridge, MA
Research Intern — May 2023 - Aug 2023

- Biomarker discovery for Parkinson's disease using proteomics data.
- Worked with Kristen Severson, Ava Amini, and Lorin Crawford in the BioML team.
- Manuscript currently in preparation.

Riverfield Partners LLP — London, UK
Scientific Consultant — Apr 2023 - May 2023

- Worked on pharma investments.
- Analysed AI-based drug discovery companies and clinical trial results.

Arts & Business College of London — London, UK
Academic Tutor — Jan 2022 - Jan 2023

- Tutored machine learning, maths, and biology at A-Level/undergrad level.
- Helped set up and deliver online data analytics course to foreign students.

Imperial College London — London, UK
Undergraduate Research Intern — July 2019 - Sept 2019

- Improving Gaussian process regression using curvature.
- Worked with Samir Bhatt at Imperial branch of St Mary's Hospital.

Stealth Startup — London, UK
Co-Founder, CTO — Dec 2018 - Sep 2019

- Tech startup using augmented reality for gamified marketing (think "Pokémon Go for coupons").
- Built proof-of-concept iPhone app and went through initial raising.

PREPRINTS & PUBLICATIONS

From most recent work.

1. **Vijayaraghavan, A.**, Badea, C. Minimum Levels of Interpretability for Artificial Moral Agents (2023). *arXiv (preprint, under review).*

   - Ethics review paper bridging technical aspects of interpretability with design of moral decision-making models.

2. Wang, M., **Vijayaraghavan, A.**, Beck, T., Posma, J.M. Vocabulary Matters: An Annotation Pipeline and Two Deep Learning Algorithms for Enzyme Named Entity Recognition (2023). *bioRxiv (preprint, under review)*.

- Enzyme named entity recognition (NER) paper i.e. spotting enzyme names in papers.
- Designed deep learning algorithms which achieve SOTA performance for enzyme NER.

Teaching Service & Outreach

AI4Health Hackathon   Imperial College London
Co-Organiser   Sept 2023

- Organised London's first Generative AI x Healthcare hackathon. Raised funding for 3 day event.
- Took entrepreneurship focus and built prizes with Hummingbird VC and Microsoft for Startups.

Science Communication   Online!
Content Creator   Apr 2022 - Present

- Creating YouTube videos and writing blog posts.

Biomedical Data Science (BSc in Biomedical Sciences)   Imperial College London
Graduate Teaching Assistant   Summer 2022, 2023

- Helped develop Python notebook tutorials alongside other GTAs.
- Assisted main course lead in computational tutorials processing 'omics data.

Statistical Programming (MRes in Biomedical Research)   Imperial College London
Graduate Teaching Assistant   Autumn 2021

- Assisted main course lead in computational statistics tutorials.

Skills & Interests

- **Programming Languages**: familiar with Python, R; exposed to Java, SQL, C, Swift.

- **Technologies**: familiar with PyTorch, Git, Linux/Unix, Latex; exposed to CI/CD (GitLab, AWS, Azure), TensorFlow, JAX.

- **Extracurricular**: Imperial College Computing Football Team Captain '19/20, Imperial College Hip Hop Society Founder & Web Secretary '19/20, Music Journalism (published as a magazine), Music Production (currently working on three track EP combining deep house and techno), Screenwriting (wrote a South Asian dark comedy feature length called "A Small Flame").

- **Languages**: English (Native), Russian (Basic), Spanish (Basic).

Achievements

Dean's List for UCL Division of Medicine   University College London - London, UK
Highest performing student on MSc in Precision Medicine '20/21.   Sep 2021

"hatch" Hack 2018 Winners   Ministry of Justice - London, UK
Business model for app targeting postpartum depression in North India.   Nov 2018

B1 Proficiency Russian   Liden & Denz School - Moscow, Russia
Referring to the TKRI levels, progressed from A2+ to B1.   June 2018

Future Problem Solving Program   UK, USA
Won national program four years running; top European team in international program in USA.   2014-2017