

Avish Vijayaraghavan

Translational Machine Learning for Precision Medicine

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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 raised pre-seed.

PREPRINTS & PUBLICATIONS

From most recent work. (Three more preprints in preparation: microbiome literature NER (w/ Imperial), proteomics for idiopathic pulmonary fibrosis (w/ Imperial), proteomics for Parkinson's disease (w/ Microsoft).)

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

Co-Organiser

Imperial College London

Sept 2023

- Organised London's first [Generative AI x Healthcare hackathon](#). Raised funding for 3 day event from OpenAI, Hummingbird VC, and the AI4Health CDT.
- Took entrepreneurship focus and built prizes with Hummingbird VC and Microsoft for Startups.

Science Communication

Content Creator

Online!

Apr 2022 - Present

- Creating [YouTube videos](#) and writing [blog posts](#).

Biomedical Data Science (BSc in Biomedical Sciences)

Graduate Teaching Assistant

Imperial College London

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)

Graduate Teaching Assistant

Imperial College London

Autumn 2021

- Assisted main course lead in computational statistics tutorials.

SUPERVISION

Pengfei Bai (co-supervised with Joram M. Posma)

MRes thesis on IPF metabolomics and topological machine learning.

Imperial College London

Oct 2023 - Oct 2024

Dhylan Patel (co-supervised with Joram M. Posma)

BSc summer project on microbiome NER.

Imperial College London

Summer 2023

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 Hip Hop Society Founder & Web Secretary '19/20, Music Journalism ([published as a magazine](#)), Music Production ([my Spotify profile](#)), Screenwriting (submitted a dark comedy feature length called "A Small Flame" to South Asian film festivals).
- **Languages:** English (Native), Hindi (Passive Fluency), Russian (Conversational), Spanish (Conversational).

ACHIEVEMENTS

Dean's List for UCL Division of Medicine

Highest performing student on MSc in Precision Medicine '20/21.

University College London - London, UK

Sep 2021

"hatch" Hack 2018 Winners

Business model for app targeting postpartum depression in North India.

Ministry of Justice - London, UK

Nov 2018

B1 Proficiency Russian

Referring to the TKRI levels, progressed from A2+ to B1.

Liden & Denz School - Moscow, Russia

June 2018

Future Problem Solving Program

Won national program four years running; top European team in international program in USA.

UK, USA

2014-2017