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

NHS Transformation Directorate / Great Ormond Street Hospital   London, UK
Data Science Intern   Jul 2024 - Dec 2024

- Using LLMs to analyse histopathology reports
- Working with NHS Transformation Directorate's data science team (Dan Schofield, Jonathan Hope, Jonny Pearson) and GOSH DRIVE (Pavi Rajendran).

Microsoft Research New England   Cambridge, MA
Research Intern   May 2023 - Aug 2023

- Biomarker discovery for Parkinson's disease using proteomics data.
- Worked with Kristen Severson, Ava Amini, Lorin Crawford, and Ashley Conard 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](#) (Aug 2024).

   - AI 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](#) (May 2024). *Journal of Proteome Research. AI and Ethics.* [Code here.](#)

   - Enzyme named entity recognition (NER) paper i.e. spotting enzyme names in papers.
   - Created enzyme literature dataset and used it to evaluate different deep learning algorithms.

TEACHING SERVICE & OUTREACH

Science Communication	Online!
Content Creator	May 2024 - Present

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

AI4Health Hackathon	Imperial College London
Co-Organiser	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.

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.

SUPERVISION

Pengfei Bai (co-supervised with Joram M. Posma)	Imperial College London
MRes thesis on IPF metabolomics and topological machine learning.	Oct 2023 - Sep 2024
Dhylan Patel (co-supervised with Joram M. Posma)	Imperial College London
BSc summer project on microbiome NER.	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](#)).

- **Languages**: English (Native), Hindi (Passive Fluency), Russian (Conversational), Spanish (Conversational).

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