

Hrushikesh Loya

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Professional Summary

I am a Postdoctoral Researcher in the Department of Statistics at the University of Oxford, working at the intersection of statistical genetics, machine learning, and computational biology. I have extensive experience in developing methods for genome-wide association studies, polygenic score analyses, and fine-mapping to investigate the genetic basis of human phenotypes. I am proficient in Python and R, as well as statistical and machine learning methods, and I have a strong track record of publications and mentorship in genetics and statistics.

Education

University of Oxford

Oxford, UK

D.Phil. in Genomic Medicine and Statistics

Oct 2020–Jan 2025

Supervisors: Prof. Simon Myers and Prof. Pier Palamara

Thesis: Powerful new methods for decomposing genome-wide ancestry and performing trait association

Indian Institute of Technology Bombay

Mumbai, India

B.Tech. + M.Tech. in Electrical Engineering

Jul 2015–Jul 2020

Class rank: 3 out of 82, GPA: 9.54/10, Specialization in Communication & Signal Processing

Work Experience

Department of Statistics

Oxford, UK

Postdoctoral Researcher

Jan 2025–Present

- Designed a genealogy-based framework that revealed hidden evolutionary events in ancient human populations
- Developed a scalable inference method that integrates deep learning-based sequence-to-function models, enabling faster and more accurate whole-genome fine-mapping of causal variants

Ossian Biosciences Inc.

Delaware, USA

Research Consultant (Part-Time)

Feb 2025–Present

- Advised on the scientific strategy and technical roadmap, contributing to the raise of \$1M in pre-seed investments
- Created an LLM-driven workflow that combined literature insights with multi-omics and GWAS data to generate therapeutic hypotheses for age-related diseases, focusing on sarcopenia

Samsung AI Center

Cambridge, UK

Research Intern

Aug 2022–Feb 2023

- Developed a novel meta-learning framework that leveraged task-level correlations across diverse search spaces to enhance neural architecture search with the aim to improve performance in under-represented domains
- Secured a first-authored UK Patent for innovative contributions to neural architecture search methodologies

Publications

Computational Biology and Statistical Genetics

- [1] H. Loya, P.F. Palamara, L. Speidel, S.R. Myers, Genealogy-based Detection of Ancient Ghost Admixture Across Africa *Target journal: Nature (in preparation)*
- [2] H. Loya, G. Kalantzis, F. Cooper, P.F. Palamara, A Scalable Variational Inference Approach for Increased Mixed-model Association Power *Nature Genetics*, 2025
- [3] J. Zhu, G. Kalantzis, A. Pazokitoroudi, H. Loya, H. Chen, S. Sankararaman, P.F. Palamara, Fast Variance Component Analysis using Large-Scale Ancestral Recombination Graphs *Cell Genomics*, 2025

- [4] N. Bird, H. Loya, L. Speidel, S.R. Myers, G. Hellenthal, The Reliability of Inferred Archaic Segments in Human Genomes *EJHG*, 2025
- [5] U. Bezaljak, H. Loya, B. Kaczmarek, M. Loose, T. Saunders, Stochastic Activation and Bistability in a Rab GTPase Network *PNAS*, 2020

Machine Learning and Methodology

- [6] H. Loya, Ł. Dudziak, A. Mehrotra, R. Lee, J. Fernandez-Marques, N. Lane, H. Wen, How Much Is Hidden in the NAS Benchmarks? Few-Shot Adaptation of a NAS Predictor *Preprint*, 2023
- [7] C. Lance, M. Luecken, D. Burkhardt, R. Cannoodt,..., Multimodal Single Cell Data Integration Challenge: Results and Lessons Learned *PMLR*, 2022
- [8] E. Dupont*, H. Loya*, M. Alizadeh, A. Golinski, Y. W. Teh, A. Doucet, COIN++: Neural Compression Across Modalities *TMLR*, 2022
- [9] H. Loya, P. Poduval, D. Anand, N. Kumar, A. Sethi, Uncertainty Estimation in Cancer Survival Prediction *ICLR Workshop*, 2020
- [10] P. Poduval, H. Loya, A. Sethi, Functional Space Variational Inference for Uncertainty Estimation in Computer Aided Diagnosis *MIDL*, 2020

Awards

- [1] Global Talent Visa: Awarded for Exceptional Promise, endorsed by the Royal Society Sep 2025
- [2] Clarendon Scholarship: Awarded to top 200 D.Phil. applicants based on academic merit May 2020
- [3] Medical Sciences CDT Award: D.Phil. funding, worth \$100,000 May 2020
- [4] Undergraduate Research Award: For research towards master's thesis Apr 2020
- [5] IIT Institute Academic Prize: Awarded to the top 2 students out of 100+ Jun 2017

Mentorship and Teaching

- [1] **Project Mentorship:**
- D.Phil. project: Genomic Medicine and Statistics (co-supervised with Prof. Pier Palamara) Oxford, UK
 - M.Sc. project: Statistical Science (co-supervised with Prof. Simon Myers) Oxford, UK
- [2] **Teaching:**
- Senior Tutor: Applied Probability; Teaching Assistant: Advanced Simulation Methods Oxford, UK
 - Teaching Assistant: Communication Systems, Differential Equations, Complex Analysis Mumbai, India

Talks, Academic Services, and Interests

- [1] Oral presentation at the Ancient Genomes conference, among top 10% abstracts Nov 2025
- [2] Oral presentation at the Probabilistic models in Genetics (ProbGen), among top 10% abstracts Apr 2024
- [3] Invited talks: UCL Genetics Institute (London), BDI/WHG Genomics Seminar, CHG Lunchtime Talk (Oxford)
- [4] Reviewer for conferences and journals: ICLR 2021, ICML 2022, Nature Genetics 2024
- [5] Languages: English (Fluent), Hindi (Native)
- [6] Interests: Traveling, Cricket, Hiking, and Sport climbing

Skills

Programming: Python, R, Julia, C++, Git, PyTorch, JAX **Bioinformatics:** Bcftools, Samtools, Picard, UKB-RAP
Statistical Genetics: Data QC, GWAS, Fine-mapping, Polygenic scores, LD score regression, Mendelian randomization