Hrushikesh Loya

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Professional Summary

I am a Postdoctoral Researcher in the Department of Statistics at the University of Oxford. My research focuses on statistical genetics, situated at the intersection of genetics, machine learning, and statistics. I develop innovative analytical tools and methods to unravel the complexity of genetic variation and advance our understanding of how genomic data inform the phenotypic diversity and the demographic history of human populations.

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 and applied a genealogy-based approach to study evolutionary dynamics across ancient human species
- 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

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

[1] H. Loya, P.F. Palamara, L. Speidel, S.R. Myers, Genealogy-based Detection of Ancient Ghost Admixture Across Africa — *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] 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

[6] E. Dupont*, H. Loya*, M. Alizadeh, A. Golinski, Y. W. Teh, A. Doucet, COIN++: Neural Compression Across Modalities — *TMLR*, 2022

[7] C. Lance, M. Luecken, D. Burkhardt, R. Cannoodt,..., Multimodal Single Cell Data Integration Challenge: Results and Lessons Learned — *PMLR*, 2022

[8] H. Loya, P. Poduval, D. Anand, N. Kumar, A. Sethi, Uncertainty Estimation in Cancer Survival Prediction — *ICLR Workshop*, 2020

[9] U. Bezaljak, H. Loya, B. Kaczmarek, M. Loose, T. Saunders, Stochastic Activation and Bistability in a Rab GTPase Network — *PNAS*, 2020

[10] P. Poduval, H. Loya, A. Sethi, Functional Space Variational Inference for Uncertainty Estimation in Computer Aided Diagnosis — *MIDL*, 2020

[11] H. Loya, D. Anand, P. Poduval, N. Kumar, A. Sethi, Bayesian Framework for Cancer Survival Prediction — *Annals of Oncology*, 2019

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] TFI-LEaRN Scholarship: Semester exchange funding, worth $6,500 — Aug 2018

[6] IIT Institute Academic Prize: Awarded to the top 2 of 100+ students — Jun 2017

Consulting, Mentorship, and Teaching

[1] **Research Consultant (Ossian Biosciences INC)** — Delaware, USA
- Advised on scientific strategy and roadmap, supporting USD 1 million pre-seed fundraising
- Curated GWAS datasets and performed exploratory analyses for target prioritization in sarcopenia

[2] **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

[3] **Teaching**:
- Senior Tutor: Applied Probability — Oxford, UK
- 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), Research Collaboration Day (Oxford), BDI/WHG Genomics Seminar (Oxford), and CHG Lunchtime Talk (Oxford)

[4] Selected as a 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, MATLAB, Julia, C++, Java

Tools: Git, LaTeX, Terminal, HDF5, HTML

Bioinformatics: Bcftools, Vcftools, Samtools, Picard, Relate

Machine Learning: Scikit-learn, PyTorch, JAX