Yash Mali

ymali@student.ubc.ca | Website | Google Scholar | Linkedin | Github

Education

University of British Columbia
BSc in Computer Science, expected | Vancouver, BC

Experience

Healthcare AI – Undergraduate Research | May 2025 – Present
*UBC Medicine & BC Cancer (**co-op**, continuing part-time)* | Vancouver, BC

- Built and deployed (on AWS) multi step LLM agents with knowledge bases that ingest medical guidelines and deliver evidence-based recommendations to doctors and patients. Collaborated with **UBC's Cloud Innovation Centre**.
- Apart from the technical side of research, I have worked on securing partnerships with companies like AWS, submitted grants as a "co-investigator", and submitted research ethics board documents. Advised by Dr. John Jose Nunez.

ML Engineer – Undergraduate Research | May 2025 – Present
UBC SCARP & ECE (part-time) | Vancouver, BC

- Using latest developments in NLP and Computer Vision to analyze public records from Vancouver's housing development approval process. Advised by Dr. Julia Harten and Dr. Christos Thrampoulidis.

AI and Automation Developer | Sep 2024 – May 2025
*Lux Bio (**co-op**)* | Vancouver, BC

- Applied **AI-based drug discovery tools** like AlphaFold and ProteinMPNN to optimize sequences and 3D structures of enzymes. Revamped automation systems for bioprocess engineering – orchestrating sensors, pumps, motors, and valves.

Computer Vision & Automation – Undergraduate Research | May 2024 – Sep 2024
*UBC Engineering @ Frostad Research Group (**co-op**)* | Vancouver, BC

- Developed particle tracking software using an **ensemble of open-source computer vision models**. Automated and developed data collection software for new instruments invented by the research group. Advised by Dr. John Frostad.

Additional Experience

Domain Adaptation Research | Jan 2026 – Present
UBC Computer Science (part-time, course-based) | Vancouver, BC

- Domain adaptation methods based on feature sharpening. Investigating how domain adaptation methods change representations and decision boundaries. Advised by Dr. Evan Shelhamer.

Quantum ML in Chemistry | Jan 2026 – Present
UBC Chemistry (part-time, course-based) | Vancouver, BC

- Investigated how variational quantum circuits and quantum encoding methods provide improved privacy to input reconstruction in federated learning for chemical applications, compared to classical machine learning models. Advised by Dr. Jolene Reid.

Undergraduate Thesis | May 2025 – Dec 2025
UBC ECE (part-time, course-based) | Vancouver, BC

- I am researching how combinations of diversity and noise in pretraining data affect generalization, learning dynamics, and representations through controlled synthetic data experiments. Advised by Dr. Christos Thrampoulidis.

AI Curriculum Development | May 2025 – Dec 2025
UBC Arts, prAxIs Team (part-time, course based) | Vancouver, BC

- **Developing applied AI modules** in existing faculty of arts courses that highlight how AI can be used in their field. For example, sequence modelling in economics or computer vision in archeology. Advised by Dr. Laura Nelson and Dr. Jonathan Graves. More info here.
- I am **teaching** some modules like "Autoregressive models in Economics" and "A Visual Introduction to Deep Learning"

Publications and Preprints

- **Mali, Y.**, Shelhamer, E. **2026**

  LookSharp: Attention Entropy Minimization for Test-Time Adaptation

  Developed a novel test time adaptation objective based on the attention mechanism to improve robustness to corruptions. Accepted to Test-Time Updates and Catch, Adapt, and Operate **workshops at ICLR**.

- **Mali, Y.**, Zeng, J., Heo, K., Zhang, G., Chen, J., Keramatian, K., Saraf, G., Solmi, M., Tam, E., Parikh, S., Schaffer, A., Beaulieu, S., Ng, R., Yatham, L. N., and Nunez, J.-J. **2026**

  A Chatbot for the Management of Bipolar Disorder: Using Retrieval-Augmented Generation with an Open-Weight Large Language Model to Answer Clinical Questions Based on the CANMAT and ISBD 2018 Guidelines. **Canadian Journal of Psychiatry. Submitted, under review**

  Secured compute/hosting funding, prepared ethics board submissions, designed and implemented methodology, developed AWS backend, built initial frontend, contributed to evaluation framework, and wrote the initial draft.

- Phaterpekar, T., Zeng, Z., **Mali, Y.**, Leung, B., Ho, C., Ng, R. T., Bates, A. T., and Nunez, J.-J. **2026**

  Investigating Fine-tuning versus Zero-Shot Learning for General Large Language Models when Predicting Cancer Survival from Initial Oncology Consultation Documents. **ESMO Real World Data and Digital Oncology**.

  Designed and executed secondary experiments, helped engineer the ML pipeline, conducted evaluation analyses, and assisted in drafting/revising the manuscript.

- Santos O'Keefe, L. M. A., **Mali, Y.**, and Frostad, J. **2026**

  A particle cohort study (ParCS) of the impact of glucose and sucrose solutions on the kinetics of starch gelatinization. **Food Hydrocolloids**.

  Developed particle-tracking software and analysis pipeline.

- Nelson, L., Graves, J., **Mali, Y.**, and prAxIs Contributors. **2025**

  Integrating Applied AI Modules into Economics Education. **Conference on Teaching and Research in Economic Education (CTREE)**

  Developed applied AI education modules, contributed to curriculum design and implementation through Jupyter Notebooks.

Talks and Presentations

- *LookSharp: Attention Entropy Minimization for Test-Time Adaptation* – **Mali, Y.**, Shelhamer, E. **2026**

  Computer Science Society Research Conference (Institutional, Talk)

- *Co-Designing AI for Cancer Care: Interactive Demo and Feedback on a Personal Navigation Assistant Prototype.* – Nunez, J.-J., Avery, J., Wu, S., Bates, A., **Mali, Y.**, Cook, O., and Chen, T. **2025**

  BC Cancer Summit 2025. (National, Invited Talk). **Only undergraduate speaker at the summit.**

- *AI in Clinical Decision Support for Mood Disorders* – **Mali, Y.**, Nunez, J.-J. **2025**

  Mood Disorders Center Trainee Seminar **2025**. (Institutional, Invited Talk).

- *Agentic NLP for Medical Guidelines.* – **Mali, Y.** and Nunez, J.-J. **2025**

  CAIDA/TrustML @ ICML Visits 2025. (Institutional, Poster).

  UBC Psychiatry Research Day 2025. (Institutional, Poster).

  Multidisciplinary Undergraduate Research Conference 2025. (Institutional, Talk).

- *Quantification of Starch Gelatinization Properties in Glucose and Sucrose Solutions using ParCS and Deep Learning.* – Santos O'Keefe, L. M. A., **Mali, Y.**, and Frostad, J. **2025**

  Multidisciplinary Undergraduate Research Conference 2025. (Institutional, Talk).

Awards

Advanced Machine Learning Network: AML-TN | $ 5,000 *April 2025*

3X Undergraduate Research Award: WLIURA | $ 6,000 Each *May 2024, 2025, 2026*

Additional Experience

UBC AI Club – **President** | Jan 2025 – Present

- President: Leading initiatives to encourage student understanding and future pathways in AI and ML. Started the AI reading group where we teach students interested in research foundational papers in deep learning.

UBC Uncrewed Aircraft Systems – **ML Lead** | Sep 2024 – Present

- Leading the ML sub-team to explore and tune open-sourced models for object detection and tracking. This is a small piece of the puzzle on our drones that compete in two university-level autonomous drone competitions every year.

UBC Biological Internet of Things – **Instrumentation** | May 2025 – Present

- Automating brewing/fermentation equipment with IoT-controlled devices.

Technical Skills

Languages: Python, Java, C#, C/C++, Java/TypeScript, R, MATLAB, PHP, Kotlin

Libraries/Frameworks: Slurm, scikit-learn, PyTorch, JAX, HuggingFace, Sentence Transformers, LangChain/Graph, DSPy, NumPy, Polars, OpenAI, TensorFlow, Pandas, CuPy, Open-CV, React, Node.js, Flask, JUnit

Tools: Git, SQL, Docker, Visual Studio Code, PyCharm, IntelliJ, Eclipse, Linux, Bash/Zsh, Azure, AWS SageMaker, Bedrock, Lambda, Gateway, Cognito & S3, Google Vertex AI