

# KUMAR VARENYA

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## EDUCATION

### University of British Columbia

Vancouver, BC

Bachelor of Applied Science in Computer Engineering and Honours Mathematics

2021 – 2026

## EXPERIENCE

### UBC Investment Management Trust Inc.

Vancouver, BC

Risk/Systems Engineer (UBC CS DMM: Operations Research & Financial Engineering)

September 2025 – Present

- Developed quantitative optimization models for allocation across multi-asset \$2.336 billion endowment portfolio.
- Engineered risk analytics infrastructure integrating factor models, scenario simulations, and stress-testing.
- Collaborated with UBCiM to translate operational research outputs into actionable allocation and hedging strategies.

### Population Data BC

Vancouver, BC

Software Programmer (Work Learn)

September 2022 – April 2026

- Built Python and SQL ETL pipelines to boost data throughput and reduce latency for large epidemiological datasets.
- Developed containerized microservices with API gateways to enable secure, compliant data access.
- Refactored legacy code using design patterns and optimizations to improve scalability and maintainability.

### Amazon

Vancouver, BC

Software Development Engineer Intern (AWS)

May 2024 – Dec 2024

- Built AI software package using Docker, Kubernetes, and AWS (CDK, Fargate, Bedrock), improving efficiency by 50%.
- Designed secure LLM prompt templates and PII detection, cutting errors by 70% with zero breaches.
- Implemented unit and integration tests (100% pass rate); contributed to key feature deployment for Prime Day.

### University of British Columbia, Department of Computer Science

Vancouver, BC

Teaching Assistant (CPSC 110, CPSC 121)

January 2023 – April 2024

- Led weekly tutorials for 2000+ students, improving understanding of functional programming and discrete math.
- Graded over 500 assignments and exams per week and provided constructive feedback to improve student performance.
- Collaborated with course instructors to update course materials, aligning content with current programming practices.

### Oil and Natural Gas Corporation

New Delhi, IN

Summer Intern

Summer 2022, 2023

- Analyzed pipeline monitoring data to identify potential failures, reducing unplanned maintenance incidents by 20%.
- Supported the implementation of GIS mapping tools for resource allocation and logistics planning.
- Assisted in designing database systems to track over 1,000 equipment inspections and maintenance schedules.

## RESEARCH EXPERIENCE

### Carnegie Mellon University

Pittsburgh, PA

Undergraduate Research Assistant

May 2025 – Present

- Investigating compositional verification techniques for concurrent software systems to enhance modular analysis.
- Applied static analysis to identify data races and synchronization bugs in multithreaded C/C++ programs.

### UBC Pacific Laboratory of Artificial Intelligence

Vancouver, BC

Data Engineering Research Assistant

Sep. 2023 – Apr. 2024

- Collected, curated, and annotated Minecraft gameplay datasets to support behavioral and AI-driven analysis.
- Built preprocessing pipelines to structure spatial-temporal data for downstream machine learning tasks.

### Tokyo Institute of Technology

Tokyo, JP

Indian Delegate, Sakura Science Plan (Collaborative Research Activities Course)

2020

- Led an 8-member team to develop a fiducial-marker-based localization model for an unstable camera feed.
- Optimized real-time performance in V-rep, achieving calibration error  $\leq 0.5\%$ .

### Toyohashi University of Technology

Aichi, JP

Indian Delegate, Sakura Science Plan (Collaborative Research Activities Course)

2020

- Directed development of a multi-tasking autonomous robot, integrating sensors and actuators for real-time control.
- Enhanced navigation by optimizing A\* and Dijkstra algorithms, reducing execution time by 22%.

## TECHNICAL SKILLS

**Languages:** Java, C/C++, Python, R, SQL, HTML/CSS, MATLAB, Lua, ARM Assembly, Verilog

**Frameworks:** Git, JUnit, Swing, JavaFX, Jupyter, NumPy, TensorFlow

**Tools:** Valgrind, Bash & Shell, Altium Designer, Arduino, Raspberry Pi, Solidworks