Krish Kochar

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Education

University of Waterloo Sep 2022 - Apr 2027

Candidate for Bachelor's of Computer Science (Hons.), Co-op (AI Specialization) *GPA: 3.95*

Coursework: Operating Systems, Data Structures & Algorithms, OOPs, Computer Architecture, Compilers, Numerical Comp.

Experience

OTTO Motors by Rockwell Automation Jan 2025 - Present

Software Developer Co-op (Fleet Core)

- Designing a system for AMR interoperability, leveraging **C++**, **Python**, and **ROS2**, to optimize inter-fleet coordination

University of Waterloo & Vector Institute Sep 2024 - Dec 2024

Research Assistant, Prof. Xi He - Data Privacy & Security

- Implemented baseline black-box **Membership Inference Attacks** (DOMIAS) on AI-generated synthetic data
- Configured a **ClavaDDPM Diffusion Model** to create synthetic data from a Single-Table dataset, using **Python** with **Jupyter** to train the model and generate synthetic data with **900,000+** entries

Ford Motor Company May 2024 - Aug 2024

Platform Software Developer Intern

- Developed a Vision Compute Service in **C++** for the FNV4 **OS**, leveraging **OpenVX** and **OpenCV** for image processing
- Optimized performance using **multi-threading** & **asynchronous** operations, reducing overall processing time by **20%**
- Increased functional test coverage to **80%** by integrating gcda file packaging with **Jenkins** pipelines using **gcov**
- Automated release header validation and code size analysis using **Python** scripts, reducing package size by **20%**

Publicis Sapient May 2023 - Aug 2023

Software Engineering Intern

- Engineered **RESTful APIs** using **Go** & **Javascript** to power an employee management feature that handles **300+** users
- Collaborated to design a **microservice-based architecture** for the backend, with an integration for **GraphQL APIs** and **Hasura** for a **30%** greater scalability and improved performance

Projects

RaIInet | *C++, Xlib, UML* Nov 2023 - Dec 2023

- Collaboratively designed a 2 player **C++ board game** inspired by Stratego, using the **MVC** Architecture
- Applied **Object-Oriented Programming (OOP)** principles & **SOLID** principles for code modularity & scalability
- Crafted an aesthetically pleasing graphics display leveraging the **X11** Library with a fast **200ms** rendering time

Finvest Advisor | *Python, Streamlit, Pandas, NumPy* Oct 2023

- Launched a **Python web app** that uses mock financial data to predict profitable investment options
- Implemented and deployed recommendation algorithms utilizing **Cosine Similarity**, achieving a Precision@3 of **90%** based on the mock data of **100+** user interactions

Process Monitor | *C++, libproc, mach, ncurses* Dec 2024 - Jan 2025

- Built a lightweight system process monitoring tool in **C++**, using libproc & mach to track real-time CPU & memory usage, with functionalities for sorting and grouping processes
- Designed an intuitive command-line interface using **ncurses**, enabling users to visualize system process data seamlessly

Extracurriculars

Waterloo Aerial Robotics Group Sep 2024 - Present

Team Member - Autonomy & Firmware

- Created a 2D drone simulation in **Python** and resolved critical **OpenCV** bugs to get a functional image feed
- Tuned hyperparameters for a **YOLOv8** object detection model to detect landing pads with a **95%** mean Average Precision

Technical Skills

Languages: C++, C, Python, Bash, Javascript, Typescript, Go, R, SQL

Tools/Frameworks : Git, Docker, Kubernetes, Jenkins, SonarQube, GCP, GTest, QNX, React, Node.js, Express.js, MongoDB

Libraries: Pandas, Matplotlib, Scikit-Learn, Seaborn, OpenCV, OpenVX, Tensorflow, Keras, YOLO, Boost, ROS2