SAUMYA JAIN

saumyajain1403@gmail.com | LinkedIn | github.com/saumyajain1

TECHNICAL SKILLS

Languages: Python, R, Java, C, C++, Go, PHP, SQL, TypeScript, JavaScript, HTML, CSS, Shell Scripting, Git/GitHub

ML/Generative AI: RAG, MCP, Local LLMs, Prompt Engineering, Neural Networks, PyTorch, SciPy, NumPy, Pandas

AWS: Lambda, S3, EC2, ECR, API gateway, RDS, Redshift, OpenSearch

Web: React, Node.js, npm, REST APIs, OpenAPI, HTTP, Django | **Devops:** Grafana, Docker, Jenkins, Spinnaker, Kubernetes

TECHNICAL WORK EXPERIENCE

Software Developer Co-op | D-Wave Systems, Burnaby (Hybrid) Jan – Dec 2025

- Engineered the **NLSolver** (D-Wave's most used hybrid quantum solver) **Debug Suite** for NLSolver failure diagnoses. Comprised multiple Jenkins pipelines that together build a **GDB/Valgrind**-instrumented NLSolver image and then pull and run that image on the downloaded problem, as well as a pipeline for parallelized, large batch runs of the download and run pipelines, while posting failure traces to Slack. Reduced diagnosis time from hours to minutes.
- Built the **Debug Grafana dashboard** for real-time troubleshooting of the Hybrid Solver Service (HSS), providing visibility to logs for the solvers and related microservices with intuitive time-boxed and cross-panel filtering.
- Upgraded DSS (D-wave's storage micro-service) from **Go 1.20→1.24**. Altered the DSS images to use Debian instead of Alpine base images and to use **sidecar containers** instead of **Docker-in-Docker** for running Redis and Localstack
- Setup a **local HSS mock solver** enabling developers to locally submit pings to the solver as end to end sanity tests.
- Created multiple materialized views for the Redshift database for faster data analytics for the D-Wave BI team.

Quant Intern | QuantInsti, India Jun – Sep 2024

- Migrated Python codebase from 3.9 to 3.11.9; developed a comprehensive conda environment file and a python version checker script for dependency management while ensuring cross-platform compatibility
- Created detailed sample solutions for courses' capstone projects, which served as a reference for users.
- Developed and tested a custom library for financial data visualizations, replacing a deprecated 3rd party library.
- Reviewed and improved course content, documenting and correcting conceptual errors and technical issues.
- Gained skills in technical analysis and ML for trading, python environment/dependency management and Linux

TECHNICAL PROJECTS

Graider | *Python, Reflex, Generative AI, Groq APIs, Llama 3.2, OOP, Prompt Engineering* Oct 2024 - Present

- Developed **Graider**, a python based full-stack web app designed as an AI-based assignment grading system.
- Designed the backend using **object-oriented programming principles** to manage entities such as students, question parts, rubrics, and reference answers, facilitating efficient data handling and extensibility.
- Integrated **Groq APIs** with Llama 3.2 to power gen AI functionality, leveraging advanced prompt engineering.
- Implemented functionality for graders to paste assignment questions and have **AI auto-generate question breakdowns, reference answers, and detailed rubrics**, which are then editable in a user-friendly interface.
- Currently building features for adding student answers, enabling AI to **segregate answers by parts, evaluate each part based on rubric criteria, and provide tailored feedback**, allowing graders to verify/refine the assessments.
- Gained experience in API integration, building generative AI-driven tools, enhancing technical proficiency in **Python**, and **Reflex** for component-based front-end development. Front-end partially functional – still under development.

MNIST Image Classification | *PyTorch, Neural Networks, Deep Learning, Cross-Entropy Loss* Oct 2024

- Built a **neural network** with a single hidden layer (**ReLU**) for **multi-class classification of** handwritten digit images from the MNIST dataset. Reinforced understanding of workflows in PyTorch's deep learning framework.
- Employed the **ADAM optimizer** and **cross-entropy loss** function. Obtained a testing accuracy of ~98%.

To-Do List App | *React, JavaScript, Vite, useState, useEffect* Oct 2024

- Utilized React **hooks** such as **useState** and **useEffect** to manage component states and data persistence.
- Applied **component breakdown** principles to organize the app into smaller, reusable components, aligning with React's modular design philosophy.

Exoplanet Exploration System | *SQL, Oracle DBMS, PHP, HTML* Jan – Apr 2024

- Developed a SQL-based RDBMS, modeling exoplanets, host stars, space missions, and related research
- Implemented a comprehensive design with ER diagrams, including ISA hierarchies, participation constraints, and functional dependencies, and normalized up to 3NF ensuring data integrity and minimizing redundancy
- Developed a user friendly front-end using PHP and HTML for executing complex in-built SQL queries

Insight UBC | *TypeScript, HTML, CSS, JavaScript, Node.js, npm, REST APIs, HTTP, JSON* Sep – Dec 2023

- Developed a full-stack web app for querying historical data on university course sections and lecture rooms
- Implemented user stories: grade booster finder, lecture room locator. Built REST API server with HTTP endpoints.
- Designed a JSON-based domain specific querying language to filter, sort, group and summarize retrieved data
- Employed concurrent programming with Promises and async/await for simultaneous file loading, and implemented data persistence mechanisms for saving and loading from disk.
- Applied TDD with over 100 black-box and glass-box integration tests using mocha and chai frameworks.

Hollywood Regression | *Machine Learning, R, Data Cleaning and Visualization* Oct – Dec 2023

- Implemented regression-based ML model to explore relationships between movie attributes and financial success
- Did *Preprocessing* by employing outlier detection techniques and handled missing values to clean dataset, and used residual and QQ plot analysis to check key assumptions: linearity, homoscedasticity, and normality
- Explored polynomial/logarithmic feature transformations to address non-linearity and heteroscedasticity, and used regression analysis and exhaustive search techniques for model selection, focusing on key statistical metrics
- Demonstrated proficiency in R for data analysis and visualization; employed scatter plots, heatmaps, and boxplots.

Flight Management System | *Java, Java Swing, JUnit, JSON, OOP* Jan – Apr 2022

- Developed a desktop system for scheduling, managing, and tracking flights using Java, with a Java Swing GUI by applying OOP principles, ensuring data persistence with JSON, extensive unit testing using JUnit

Vancouver Crime Analysis | *R, Jupyter Notebook* Sep – Dec 2022

- Cleaned, wrangled, and visualized data; explored impact of pandemic on theft crimes through statistical inference; hypothesized and tested using asymptotics (2-sample z-test) and bootstrapping (simulation-based method)

Pulsar Prediction | R, Jupyter Notebook Sep – Dec 2021

- Cleaned, wrangled, visualized, and classified dataset with cross-validation, ANOVA for feature selection; implemented a supervised classification model using the k-nearest neighbors algorithm to classify stars as 'pulsar'.

NON-TECHNICAL WORK EXPERIENCE

Undergraduate Teaching Assistant | **UBC Department of Statistics** Sep 2023 - Present

- Assisted with the courses **DSCI 100** and **STAT 200** for teaching concepts in data science, statistics and R to over 600 students per term. Guided students in building complex capstone projects.
- Hosted weekly labs and office hours, providing guidance via presentations and one-on-one consultations.
- Performed quality assurance of course material and graded 1000s of assignments, offering constructive feedback.

Projects Commissioner | Science Undergraduate Society, UBC Jun - May 2023

- Spearheaded planning, budgeting, marketing, and execution of various initiatives and events targeted towards UBC science students; collaborated with other clubs and committees to realize these events.

Core Committee Member | Computer Club, La Martiniere for Boys 2017 – 2021

- Appointed event coordinator at interschool computing fundraiser: Exypnos (2018, 2019); brought in a total sponsorship of about 5000 CAD through outreach efforts
- Initiated a project with periodic workshops for teaching basic computer and smartphone skills to senior citizens and underprivileged children; hosted annual computer science fair, workshops for teaching Java and other projects

ACADEMIC ACCOMPLISHMENTS

Science Scholar:	Achieving 90% or greater in the top 27 credits in an academic year	2022W
Dean's List:	Achieving 80% or greater in the top 27 credits in an academic year	2022W
Scholarships:	**Charles and Jane Banks Scholarships**	2023W

EDUCATION

Combined Major in Computer Science and Statistics 4th Year
BSc | University of British Columbia, Vancouver Sep 2021 - May 2027 (expected)