Yash Swaminathan

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Education

University of Waterloo — Waterloo, ON

Bachelor of Applied Science (BASc) in Systems Design Engineering (Co-op) — *Sep. 2024 – Present*

- **Relevant Courses**: Human Factors in Design, Digital Computation, Data Structures and Algorithms

Technical Skills

Languages: Python, TypeScript, JavaScript, SQL, Go, Java, C++, HTML/CSS, SASS/SCSS, MATLAB
Frameworks/Databases: FastAPI, Node.js, Express.js, React, Next.js, PostgreSQL, Sequelize, Prisma, Spring Boot, Redis, Elasticsearch, Tailwind CSS, Bootstrap, Kubernetes, Stripe SDK, SQLAlchemy
Developer Tools/Platforms: Docker, AWS, GitHub, Git, GitHub Actions, Terraform, Azure, New Relic, Cursor, VS Code, Poetry, Postman, Figma, Notion, Jira, Slack, Linear, Asana, Confluence, Bitbucket, Ubuntu, Lucid
Libraries: NumPy, Pandas, SciPy, TensorFlow, Pytest, Jest, Pydantic, PyYAML, jsonschema, Uvicorn, New Relic, Scapy, PyShark

Experience

Software Engineer Intern — Backend & DevOps — Aug 2025 – Present

Micromart — *Toronto, ON*

- Optimized application availability by managing **REST APIs** in **TypeScript**, improving uptime from **99.94% → 99.993%**, enabling over **225,000 successful requests** annually.
- Integrated **New Relic** observability tools for middleware, improving visibility into performance bottlenecks and saving **40+ engineering hours per quarter ($8,000+ annually)** through faster debugging and resolution.

Software Developer Intern — Backend & DevOps — Jan 2025 – Apr 2025

Turing — *Calgary, AB*

- Designed and implemented **Alembic Migration** scripts for **PostgreSQL** test databases, automating test database creation and configuration, reducing manual setup time by **200+** hours, resulting in **$15,000+** of savings.
- Developed and approved **10+ RESTful API endpoints (FastAPI)** and authored/approved **60+** unit tests to achieve **95%** coverage, ensuring reliable API behaviour and maintenance of critical features.
- Resolved **20+** technical issues (Docker misconfigs, API bottlenecks, flaky tests), improving system stability and reliability.
- Contributed to scaling and building a full-stack web app by developing **RESTful API** endpoints to support **5000+** users.

Data Science Intern — Sep 2023 – Jan 2024

Gradiant (Synauta) — *Calgary, AB*

- Developed a **Python**-based analytics pipeline to process **IoT sensor data**, revealing operational patterns that boosted overall system efficiency by **15–20%**.
- Designed and deployed a **Dockerized Python pipeline** (**Pandas, NumPy, SciPy**) leveraging **cron jobs** for scheduling, automating cartridge filter substitutions and eliminating **90% of manual processes**.

Projects

Network Anomaly Detection System | *Python, FastApi, Scapy, PyShark, TensorFlow, Sklearn, React, Tailwind CSS*

- Built a real-time threat detection system with **TensorFlow**-powered **deep autoencoders** for traffic modelling and **isolation forests** for anomaly isolation, achieving **94.6% detection accuracy** on synthetic and live data.
- Engineered a **feature pipeline** using data metrics, session statistics, and categorical encoding, converting raw **Scapy** and **PyShark** captures into accurate Machine Learning inputs.
- Simulated network attacks (port scans, data exfiltration), reducing detection latency by **42%** via model threshold tuning and optimized flow batching.

E-Commerce-Platform | *Java, Go, JavaScript, TypeScript, Spring Boot, React (Next.js), Express.js, Prisma, Stripe SDK*

- Deployed on **AWS** and **Kubernetes**, ensuring **99.99% uptime** and auto-scaling to handle **10,000+** concurrent users.
- Utilized **Go** and **Spring Boot** microservices, cutting order-processing latency by **40%** , enabling real-time inventory sync.
- Integrated **Stripe** payments and **AWS S3 storage**, ensuring secure transactions and reliable asset management.
- Implemented end-to-end **CI/CD** automation with **GitHub Actions** and **Terraform**, reducing deployment times by **60%** and enabling zero-downtime releases.

File Management & Validation System | *Python, FastAPI, PostgreSQL, React, Docker, Poetry, HTML/CSS*

- Used **PostgreSQL** to store configuration data and run comparative queries, enabling reliable schema deviation detection.
- Implemented YAML file validation using **PyYAML** and **jsonschema**, streamlining error detection and enforcing compliance with predefined configuration standards