Talha Yildirim

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Education

University of Waterloo — Waterloo, ON
Bachelor of Mathematics, Statistics and Computing, Honours, Co-operative program — *Expected April 2027*

Technical Skills

Languages: C, C++, Rust, Go, Python, Java, Javascript, SQL, Bash
Frameworks: FastAPI, MySQL, PostgreSQL, MongoDB, Heroku, NGINX, Node.js, Jenkins
Developer Tools: Git, GNU/Linux, Bash, Postman, Apache, Jira, Kubernetes, Docker, AWS, GCP, Terraform

Experience

DevOps Engineering Intern — Jan 2025 – Apr 2025
Sun Life — *Toronto, ON*

- Implemented **Kubernetes pod autoscaling** and resource quotas across namespaces using **Helm** and **Kustomize**, optimizing cluster utilization based on real-time metrics; reducing compute costs and overprovisioning by **30%**
- Deployed a **Kafka** cluster to a production environment through Harness, using **Kubernetes**, Helm, and Makefiles
- Spearheaded a project to clone and manage **AWS** Terraform policies by building CI/CD pipelines with **Jenkins**, incorporating automated testing to ensure security compliance and compatibility of modules via testing units
- Setup infrastructure and IAM roles for ECR lifecycle policies, using Terraform, saving $1000/month in server costs

AI/Machine Learning Developer — Sept 2023 – Feb 2025
WAT.ai — *Waterloo, ON*

- Improved data pipeline efficiency by **40%** by automating the preprocessing of raw data—filtering key parameters, handling missing values, and aggregating features into vectorized formats—using **Python** and **Pandas**
- Implemented XGBoost Regressor algorithm to capture non-linear relationship between data, using PyTorch
- Reduced overfitting by **30%** and improved validation performance by **22%** through k-fold cross-validation

Cloud Engineering Intern — Jan 2024 – Apr 2024
Questrade — *Toronto, ON*

- Orchestrated a series of DAGs in **Apache** Airflow via **GCP** Composer, to validate data integrity between staging and production **BigQuery** datasets nightly, with Slack alerts for anomalies, reducing data quality issues by **60%**
- Wrote a **Bash** script scrapping SCCM, sending weekly emails with server information, reducing task time by **90%**
- Developed an **RBAC** system using **Django** REST API endpoints and a CLI tool to address growing security and access management needs, resulting in enhanced system security and streamlined user role management.
- Spearheaded the development of a project to parse CSV files and generate reports, using **Python** and **GCP**

Software Engineering Intern — May 2023 – Aug 2023
Royal Bank of Canada — *Toronto, ON*

- Integrated **Ansible API** into an internal dashboard, enabling teams to submit infrastructure automation requests (e.g., VM provisioning, config changes) via a web interface, reducing turnaround time from **days** to **hours**
- Automated data migration and validation increasing test coverage by **70%**, improving accuracy by **25%** through accounting for edge cases, which were used to check for discrepancies between the SAP and Workday databases
- Developed a Lambda that consumes Inspector findings to update commit statuses with vulnerability information

Projects

Chess Engine | *C++, XQuartz, X11*

- Developed a fully functional **C++** chess engine from scratch with a **UML** design sketch and **MVC** design pattern
- Wrote scalable AI agents using **minimax** and **alpha-beta** pruning algorithms with configurable search depths, leveraging heuristic evaluation functions and state-space vectors to enable modular difficulty tuning
- Applied **OOP** principles and design patterns to build a maintainable codebase with high cohesion and low coupling

Traffic Network Optimization | *Python, PyTorch, Graph Theory*

- Represented traffic networks in a graph-theoretic framework using Dijkstra's algorithm and Braess' paradox
- Treated the system topologically with Brouwer's fixed point theorem, using **PyTorch** to find the Nash equilibria
- Modeled dynamic traffic flow using time-dependent edge weights and simulated adaptive routing behavior, analyzing convergence toward equilibrium states under varying network constraints