

Piyush Upadhyay

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Skills

Languages	Golang, Python, C/C++, TypeScript, JavaScript, Scala, Flutter, Kotlin, Git, Bash Scripting
Frameworks	Protocol Buffer, gRPC, NodeJS, Django, React (Redux, Recoil, Native), Svelte
Infrastructure/DB	Kubernetes, Helm, Terraform, Ansible, Docker, PostgreSQL, MongoDB, Redis, NGINX, Envoy
Managed Services	AWS (DynamoDB, SQS), DigitalOcean (VPS), GCP (GKE), CockroachDB, AssemblyAI, Supabase
Others	CI (Gitlab, Github Actions), Agile (Scrum, Kanban, Scrumban), Database Design

Education

University of Waterloo

GPA: 3.7 [81.71%]

BACHELORS IN COMPUTER SCIENCE (HONS, CO-OP), ENTREPRENEURSHIP (MINOR)

September 2020 - April 2025

- **Recent Coursework:** Software Design & Architecture, Computer Networks, Introduction to AI, Entrepreneurial Planning
- **Scholarships:** Presidential Scholarship of Distinction

Experience

Versa Networks

San Jose, California (Remote)

SOFTWARE ENG INTERN [FOCUS: CLOUD, DATA ENG] (4 MONTH CO-OP + 4 MONTH PART-TIME)

January 2023 - August 2023

- **Introduced cloud-native deployment feature-set** to Versa's Core Virtual Network Service Appliance through containerization with support for dynamically assigned SR-IOV network interfaces and network namespaces
- Developed **Custom Resource Definitions (CRDs)** and **Kubernetes Operator** using Kopf (Python) to provide **bundled resource-aware SD-WAN deployment specifications** with dynamic context-based status updates for easier client-interaction
- Built Terraform scripts to **deploy and manage kubernetes cluster on GCE and on-premise**, pre-configured with Strimzi Kafka, multiple Kafka topics, Prometheus, Grafana, StatsD and Alert-Manager for swift production environment setup
- **Improved DIFFI-Isolation Forest anomaly detection** algorithm (Scala) for Apache Spark jobs by inculcating Extended Isolation Forest branching with eXplainable AI (XAI) techniques (DIFFI) to improve AUC accuracy with minimal training time overhead

Versa Networks

San Jose, California (Remote)

SOFTWARE ENG INTERN [FOCUS: NETWORK, PERFORMANCE] (4 MONTH CO-OP + 4 MONTH PART-TIME)

May 2022 - December 2022

- Tailored a stand-alone utility using **Python, Bash, Perf, eBPF, and C** to perform real-time longitudinal profiling of process traces and NIC statistics in Versa's Operating System (VOS™), reducing **in-depth bug-analysis time for core services by up to 63%**
- Developed a multi-threaded Python application to generate dynamic dashboard (**React-JS**) composed of the above-profiled data showcased via Line-charts and Flame graphs for a detail-oriented overview of VOS™
- Integrated eBPF libraries into VOS™ for allowing improved data monitoring and service observability with lower overheads, providing **significant resource-utilization improvements while debugging L3 issues**
- Engineered a compression and pruning algorithm using pigz, yielding an average compression ratio of 17:1, while maintaining a maximum CPU overhead of **4% utilization throughout its life cycle**

Mentum Inc

Markham, Ontario (Remote)

SOFTWARE ENG INTERN [FOCUS: BACKEND] (4 MONTH CO-OP + 3 MONTH PART-TIME)

September 2021 - March 2022

- Lead the development of a **Golang and TypeScript** based **Delayed Job Scheduler** that automated stock availability updates for 1000+ SKUs, **reducing product stock errors by 35%** and saving 10+ hours per week in manual updates
- Developed a Sharding technique using composite keys and Kubernetes API to prevent hot-reloading and partitioning issues on **DynamoDB**, ensuring **100% data integrity while scaling pods**, both horizontally and vertically, in the Kubernetes cluster
- Utilized AWS SQS and DynamoDB to efficiently schedule tasks distributed over multiple Kubernetes instances of both Scheduler and Executor micro-services, resulting in a **35% increase in job throughput** with minimal error margin of 3%
- Implemented **Unary gRPC services** to integrate financial gateways (Nash, Bambora) for Payment Card Industry compliance

Projects

PersonaGen (600+ Early Launch Users)

www.personagen.app

A.I. BASED PERSONA GENERATOR

- Developed a SaaS to **generate detailed User Personas based on the product and feature description** using pre-existing LLMs
- Developed multiple **Golang** micro-services, hidden behind Envoy proxy to use grpc-web for improved speed and performance
- **Technology Utilized:** Protocol-Buffers, Golang (gRPC, Cobra, Migration), CockroachDB, Redis, React (TypeScript, grpc-web), Docker (docker-compose), Envoy