Murtadha Saeed Nisyif

Cloud and ML Engineer

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Relevant Work Experience

ML Engineer - Researcher **Jan 2024 – Dec 2024**

University of Guelph *Guelph, Ontario*

- Collected latency data from diverse hardware setups and performed feature engineering to identify optimal correlations, enhancing model performance in varying network conditions
- Designed, implemented, and trained an adaptive model extension to the existing semantic communication transformer, improving real-time responses to network bandwidth fluctuations while maintaining at least 96% accuracy
- Pioneered deployable transformer-based models for semantic data transmission, achieving 29% lower latencies in end-to-end communications specifically 30x reduction in network bandwidth utilization
- Deployed existing PyTorch-based implementations onto Kira SoCs using Vitis AI™, leveraging hardware acceleration

Software Developer **Oct 2022 – Oct 2023**

University of Guelph - Robotics Institute *Guelph, Ontario*

- Implemented server-client backend system powering an Assistive Robotic Feeding System for elderly individuals in ROS2 powered by packages in Python and C++
- Designed and deployed a wheelchair-friendly smart door system with geo-fencing and auto-opening/closing capabilities, leveraging ESP32 microprocessors, PIR sensors, and smartphone control through a React Native app
- Maintained and enhanced the smart door system's codebase with a Node.js backend, React Native mobile app, and Vue dashboard, integrating voice recognition, passive BLE door searching, and real-time user analytics
- Deployed full-stack applications on AWS EC2 and S3 using Terraform for Infrastructure as Code (IaC), ensuring scalable, reliable, and automated cloud infrastructure

Information Technology Analyst **Jul 2020 – Dec 2020**

Kitchener Downtown Community Health Centre - SRHC *Kitchener, Ontario*

- Designed and implemented a scalable on-premise file-sharing system using Samba eliminating email-based file exchanges, and managed Fortinet's FortiGate firewall and VPN for secure network access
- Streamlined communication between doctors and patients by optimizing the 3CX PBX phone system's answering machine workflow, reducing patient's on-phone waiting times by 30%
- Led a comprehensive network infrastructure upgrade, achieving 45% budget savings while modernizing systems to meet organizational performance and security standards

Skills

Languages:	C/C++, Python, Rust, Java, SQL, Bash, JavaScript, HTML, CSS, CMake
Frameworks:	PyTorch, TensorFlow, Node.js, React, Express.js, ROS
Cloud and DevOps:	AWS, Docker, Kubernetes, Terraform, Jenkins, PostgreSQL, MongoDB, SQLite
Tools and Protocols:	Git, Postman, Flask, Swagger, Jira, CMake, HTTP, TCP

Projects

Full-stack application Built and Dockerized a full-stack portfolio using React and Java (microservices architecture), hosting it on a home server via a Jenkins CI/CD pipeline and Minio S3 bucket

DevOps Homelab Setup dockerized applications, virtual machines, and Kubernetes clusters sing Terraform scripts. Managed personal Jenkins CI/CD pipelines, and implemented Ceph for distributed storage

RL Dynamic Noise Cancelling: Implemented real-time Automatic Noise Filtering using Reinforcement Learning and Dynamic Sparse Training in PyTorch

Education

University of Guelph | ***B.Comp. - Computer Science***

University of Guelph | ***B.Eng. - Computer Engineering***

Publications

Boosting Edge-to-Cloud Data Transmission Efficiency with Semantic Transcoding

Published @ IEEE CCECE (Aug 2024)

- Explored a novel approach to incorporate semantic transcoding in edge-cloud system to reduce data latency rates