Murtadha Saeed Nisyif

Software Engineer

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Relevant Work Experience

Software Engineer - Research Assistant **Jan 2024 – Dec 2024**
University of Guelph *Guelph, Ontario*

- Pioneered transformer-based models for semantic data transmission, enhancing E2E communications
- Developed PyTorch models, boosting data transmission efficiency and reliability
- Deployed implementation on industry-grade SoC with hardware acceleration using Vitis AI™, optimizing performance
- Published findings in CCECE 2024, showcasing improved data transmission latencies

Software Developer **Oct 2022 – Oct 2023**
University of Guelph - Robotics Institute *Guelph, Ontario*

- Developed ROS2 modules in C++ and Python for an Assistive Robotic Feeding System for Elderly Individuals
- Enhanced a React Native mobile app, ensuring flawless BLE reliability with IoT devices for maximum accessibility
- Deployed an analytics application using AWS services and a PostgreSQL database for research survey data

Information Technology Analyst **Jul 2020 – Oct 2020**
Kitchener Downtown Community Health Centre - SRHC *Kitchener, Ontario*

- Achieved a 45% savings on a $10,000 budget for equipment upgrades
- Streamlined communication between doctors and patients, reducing patient waiting times by 30%
- Maintained the OSCAR McMaster EMR system and successfully migrated to the new TELUS healthcare infrastructure

Skills

Languages: C/C++/C#, Python, JavaScript, Java, HTML, MATLAB, CSS
Frameworks: PyTorch, Node.JS, React JS, Express JS, .NET, TensorFlow, ROS, Django
Databases: MongoDB, MySQL, SQLite, MSSQL
Other: Docker, AWS, Kubernetes, Git, Postman, Flask, Swagger, WoodPecker CI, HTTP, TCP, Xilinix, CMake

Projects

Transformer-based Semantic Transcoding: Developed PyTorch models for E2E semantic transcoding, deployed on Xilinx SoC boards using Vitis AI™

Clean Architecture C# Backend: Engineered a scalable portfolio website backend using C#, adhering to Clean Architecture principles and implementing CI/CD pipeline for efficient deployment

DevOps Homelab Maestro: Orchestrating a robust homelab environment with Docker containers, Kubernetes clusters, Ceph distributed storage, and CI/CD pipelines for seamless application deployment

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

Real-Time Text-to-Braille: Built a Raspberry Pi device for real-time image-to-Braille conversion, enhancing accessibility for the deaf-blind community

ZAMAZ UTI Diagnosis: Developed a Raspberry Pi-based system for automated urine test analysis, achieving 16x faster results than standard methods

Education

University of Guelph | ***MASc.*** **Sep 2023 – Dec 2024**
University of Guelph | ***B.Eng. in Computer Engineering*** **Sep 2019 – Apr 2023**

Publications

Boosting Edge-to-Cloud Data Transmission Efficiency with Semantic Transcoding
Published @ IEEE CCECE (Aug 2024)

- Developed a semantic transcoding method using transformer-based models for edge-to-cloud data transmission, reducing latency by up to 30% and optimizing bandwidth in core network systems to support next-generation applications.