

Relevant Work Experience

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| <b>Software Engineer - Research Assistant</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>Jan 2024 – Dec 2024</b> |
| <i>University of Guelph</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <i>Guelph, Ontario</i>     |
| <ul style="list-style-type: none"><li>Pioneered transformer-based models for semantic data transmission, reducing latencies in E2E communications by 29%</li><li>Developed PyTorch models, boosting efficiency in E2E networks by reducing network bandwidth utilization by 30x</li><li>Deployed models on SoC with Vitis AI™, utilizing hardware acceleration for real-world applicability</li><li>Published findings in CCECE 2024, showcasing improved data transmission latencies</li></ul> |                            |
| <b>Software Developer</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Oct 2022 – Oct 2023</b> |
| <i>University of Guelph - Robotics Institute</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                | <i>Guelph, Ontario</i>     |
| <ul style="list-style-type: none"><li>Developed ROS2 modules in C++ and Python for an Assistive Robotic Feeding System for Elderly Individuals</li><li>Enhanced a React Native mobile app, ensuring flawless BLE reliability with IoT devices for maximum accessibility</li><li>Deployed an analytics application using AWS services and a PostgreSQL database for research survey data</li></ul>                                                                                               |                            |
| <b>Information Technology Analyst</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>Jul 2020 – Oct 2020</b> |
| <i>Kitchener Downtown Community Health Centre - SRHC</i>                                                                                                                                                                                                                                                                                                                                                                                                                                        | <i>Kitchener, Ontario</i>  |
| <ul style="list-style-type: none"><li>Achieved a 45% savings on a \$10,000 budget for equipment upgrades</li><li>Streamlined communication between doctors and patients, reducing patient waiting times by 30%</li><li>Maintained the OSCAR McMaster EMR system and successfully migrated to the new TELUS healthcare infrastructure</li></ul>                                                                                                                                                  |                            |

Skills

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| <b>Languages:</b>             | C/C++/C#, Python, JavaScript, SQL, R, Java, HTML, MATLAB, CSS              |
| <b>Frameworks:</b>            | PyTorch, Node.JS, React, Express JS, .NET, TensorFlow, ROS, Django         |
| <b>Cloud &amp; DB:</b>        | Docker, AWS, Kubernetes, WoodPecker CI, PostgreSQL, MongoDB, MySQL, SQLite |
| <b>Tools &amp; Protocols:</b> | Git, Postman, Flask, Swagger, HTTP, TCP, Jira, CMake                       |

Projects

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|------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Transformer-based Semantic Transcoding:</b> | Developed PyTorch models for E2E semantic transcoding, deployed on Xilinx SoC boards using Vitis AI™                                                                      |
| <b>Clean Architecture C# Backend:</b>          | Engineered a scalable portfolio website backend using C#, adhering to Clean Architecture and REST API principles and implementing CI/CD pipeline for efficient deployment |
| <b>DevOps Homelab Maestro:</b>                 | Orchestrating a robust homelab environment with Docker containers, Kubernetes clusters, Ceph distributed storage, and CI/CD pipelines for seamless application deployment |
| <b>RL Dynamic Noise Cancelling:</b>            | Implemented real-time Automatic Noise Filtering using Reinforcement Learning and Dynamic Sparse Training in PyTorch                                                       |
| <b>Real-Time Text-to-Braille:</b>              | Built a Raspberry Pi device for real-time image-to-Braille conversion, enhancing accessibility for the deaf-blind community                                               |
| <b>ZAMAZ UTI Diagnosis:</b>                    | Developed a Raspberry Pi-based system for automated urine test analysis, achieving 16x faster results than standard methods                                               |

Education

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|--------------------------------------------------------------|----------------------------|
| University of Guelph   <i>M.A.Sc.</i>                        | <b>Sep 2023 – Dec 2024</b> |
| University of Guelph   <i>B.C. Computer Science</i>          | <b>Sep 2021 – Apr 2023</b> |
| University of Guelph   <i>B.Eng. in Computer Engineering</i> | <b>Sep 2019 – Apr 2023</b> |

Publications

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| <b>Boosting Edge-to-Cloud Data Transmission Efficiency with Semantic Transcoding</b>                                                                                                                                                                                                |
| <i>Published @ IEEE CCECE (Aug 2024)</i>                                                                                                                                                                                                                                            |
| <ul style="list-style-type: none"><li>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.</li></ul> |