Ethan Sequeira

https://github.com/ethanseq | http://www.linkedin.com/in/ethanseq | http://ethanseq.com

EDUCATION

McMaster University Hamilton, ON

B. Eng. Software and Biomedical Engineering (Co-op), Class of 2024

Technical Languages & DBs Python • C++ • Java • MATLAB • Shell scripting (Bash) • SQL • Postgres • Mongo • Redis

Tools Flask • FastAPI • Docker • Git • RabbitMQ • Celery • Linux • Matplotlib • NumPy • Crow • OpenCV • CUDA

Courses Data Structures & Algorithms • Software Design • Principles of Programming • Discrete Mathematics

WORK EXPERIENCE

Martinrea International | Software Engineer & Technical Lead Aug 2023 – Present | Vaughan, ON

- Lead technical architecture and development of distributed resistance spot welding optimization system, collaborating with cross-functional teams and external manufacturing partners
- Developed high-performance event-driven C++ application that processes real-time weld data and executes optimization jobs, achieving 30x performance improvement while significantly decreasing plant network traffic
- Architected distributed system with intelligent job broker that consolidated hardware requirements, enabling one edge device to service multiple manufacturing lines versus the previous multi-device-per-line setup
- Drove development of process parameter optimization algorithms in collaboration with weld engineers, while managing full-stack monitoring application and product requirements
- Mentored students in computer vision development by establishing technical infrastructure and teaching best practices in problem-solving, implementation, and data processing workflows

Martinrea International |Vision Software Lead - Co-op May 2023 – Aug 2023 | Vaughan, ON

- Co-led an R&D team in developing hardware and software solutions for various manufacturing vision applications
- Created a comprehensive Python library for industrial vision applications, providing high-level classes that abstract complex computer vision workflows and reduce development time
- Built a highly configurable data augmentation framework with spatial and pixel-level transformations, designed for seamless integration across multiple ML projects
- Implemented quality inspection solutions using both ML approaches and classical computer vision techniques for robust, scalable part quality assessment using Python and C++

Martinrea International |Software Engineering - Co-op May 2021 – Aug 2022 | Vaughan, ON

- Designed and developed an Autonomous Mobile Robot (AMR), reducing costs by $40K per unit whilst bolstering safety and efficiency in the production line by managing factory inventory using Java, Python, and C++
- Optimized computer vision algorithms through parallel computing, achieving a 2500% performance boost in AMR image processing pipelines using C++ and CUDA
- Enhanced simultaneous localization and mapping (SLAM) system with save/load functionality and implemented camera calibration using ArUco markers for precise pose estimation, significantly improving system stability and performance

PROJECTS

VieCloud | Capstone Project Apr 2024 | Hamilton, ON

- Developed a real-time cloud infrastructure using AWS services to stream and process 64-channel EEG data, building the data pipeline from hardware acquisition through automated signal processing and analysis
- Created a full-stack web app with Node.js/Express backend and Chart.js frontend for Vielight, a biotechnology company, creating an automated closed-loop system that visualizes brain wave data in real-time and dynamically adjusts photobiomodulation device parameters, reducing manual configuration time for medical practitioners

Human Pose Estimation Applications | Personal Project Mar 2022 | Hamilton, ON

- Built real-time pose estimation systems with healthcare applications, implementing fall detection with automated alerts and rehabilitation joint tracking using Python, OpenCV, BlazePose, and COCO dataset

Research

McMaster University | Research Assistant Apr 2024 | Hamilton, ON

- Under Dr. Matthew Giamou's supervision, published a paper on optimal beacon placement for range-based localization systems, developing an information-theoretic method with provable performance guarantees
- Devised an optimization framework for minimizing localization error in GNSS and autonomous robot navigation systems, with applications to sonar, radar, and WiFi-based positioning technologies using Python