# MARTIN SIT

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## **EDUCATION**

## **University of Waterloo**

**Expected May 2028** 

Honours Bachelor of Computer Science, Co-op

#### **SKILLS**

Languages: Python, C++, Java, JavaScript, TypeScript, HTML5, CSS3, SQL, Go, MATLAB, PHP

Technologies: React, Node.js, Flask, Next.js, Express.js, Tailwind CSS, Vue.js, MongoDB, TensorFlow, PyTorch, Keras, NumPy

**Development Tools**: Git, Linux, AWS (Certified Cloud Practitioner **9**)

## PROFESSIONAL EXPERIENCE

## **Machine Learning Research Intern** | Python, MATLAB, TensorFlow, Keras

Jul 2023 - Aug 2023

Sunnybrook Research Institute

Toronto, ON

- Engineered a 3D convolutional neural network (CNN) to optimize FUS treatment monitoring, enabling real-time analysis
- Achieved a 46x speed improvement with 0.99 ICC, enabling ultra-fast image reconstruction approximations
- Generated synthetic radio frequency image datasets for ML training, expanding training data by 50%
- Conducted research on advanced DNN architectures (U-Net, ResNet, DenseNet) and implemented key findings

# **Research Intern** | Python, Flask, PyAutoGUI, Networking, Linux

Oct 2022 – Jul 2023

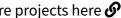
University of Waterloo

Waterloo, ON

- Architected a GUI automation system to collect over 20 GB of TCP/IP packet data from video conferencing calls
- Scraped and processed 100+ hours of video data to curate a robust dataset for ML model training
- Researched papers on traffic fingerprinting and censorship-resistant internet communications

#### **PROJECTS**

see more projects here **9** 



# Corewards - Mobile Rewards App | Remix, React, Express.js, PostgreSQL, Tailwind CSS, GPT-4, NFC

- Developed a mobile app using Remix and React to reward eco-friendly purchases, with AI-powered receipt scanning
- Designed the backend using Express.js and PostgreSQL, enabling seamless processing and classification of receipt data
- Won RBC's 1st Place (\$1,200) prize out of 842 participants at Hack the North 2024, Canada's largest hackathon

#### C++

- Built a C++ deep learning framework, with a user-friendly API based on PyTorch and Tensorflow Keras
- Implemented all algorithms (i.e. backpropagation) as well as the underlying linear algebra operations from scratch
- Used the framework to create an image classifier model for the MNIST dataset with 94% testing accuracy

## Credibility – AI Research Assistant | Python, JavaScript, React, Next.js, Tailwind CSS, Flask, Selenium, GPT-40

- Developed a web-based research tool that uses LLMs and key metrics to assess the credibility of websites
- · Architected an analysis engine based on 10+ metrics such as publisher reputation, bias, sentiment, and traffic rank
- · Leveraged GPT-4o and Selenium for automated multimodal evaluation of website content and UI

## C Kaleidoscope - Emotion/Irony Assistive Technology for Autism | Python, JavaScript, PyTorch, Flask, WebExtensions

- Engineered an ML-based application to provide emotion/irony recognition for individuals with ASD
- Trained BERT-based LLMs on 60k Tweets and Reddit comments via transfer learning
- Achieved 89% and 96% accuracy on emotion and irony detection models, respectively
- Built a Flask-based backend API to serve model inference at millisecond latency

## Sensai - Computer Vision Workout Coach | Python, JavaScript, Vue.js, Nuxt, Flask, OpenCV, Mediapipe, SocketIO, JWT

- Created a full-stack fitness platform, delivering real-time AI feedback with <100ms latency for live camera input</li>
- Engineered the backend API with Flask and SocketIO for streaming pose calculations from OpenCV/Mediapipe
- Implemented secure user authentication with JWT and managed user sessions and data with MongoDB

## OTHER EXPERIENCE

# **Hackathon Organizer - Web/Tech Head** | *React, Next.js, Tailwind CSS, MongoDB* JAMHacks 🔗

Aug 2022 - Aug 2024

Waterloo, ON

- · Led redesign for event website with React and Next.js, improving UX for 700+ newly registered users
- Re-engineered the MongoDB storage system, reducing file retrieval times by 60x through dynamic aggregation
- Built QR code-based attendance system for workshops, streamlining check-ins for 180+ participants