Ji Sung Han

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EDUCATION

University of Toronto Sep. 2021 – Dec. 2025

*Honours Bachelor of Science in **Computer Science and Statistical Machine Learning***
- Technical Director of UofT AI and Crypto Club.

Relevant Coursework:

Database System, Operating System, Software Engineering, Data Structure and Algorithm, Machine Learning, Deep Learning

EXPERIENCE

Machine Learning Engineer Intern Jan. 2023 – Aug. 2023

Chemtronics
- Utilized **LabelImg** to annotate the training dataset with bounding boxes for accurate object labeling,Implemented the **YOLO** model using the **Darknet** framework with **C++** and **CUDA** for real-time object detection, improving accuracy by **20%** and validating performance with approximately **50,000 tested samples**.
- leveraged **OpenCV** for image preprocessing and real-time video analysis.
- Enhanced model performance through **data augmentation**, **architecture adjustments**, and **hyperparameter tuning**, using **Matplotlib**, **NumPy**, **Seaborn**, **TensorBoard**, and **Optuna** for performance analysis.

Software Engineer Intern May 2022 – Aug. 2022

Maple Bit Services
- Enhanced the **payment processing system** for the company's **Point of Sale (POS)** platform utilizing **Python** and **C++**, incorporating asynchronous processing methods that led to a **35% reduction** in transaction times.
- Developed a **distributed caching** solution using **Redis** and enhanced database performance by implementing advanced **partitioning** strategies, optimizing data distribution across servers.

Open Source Developer Sep. 2024 – Dec. 2024

Langchain(via. University of Toronto)
- Implemented a **Dropbox Document Loader** using **TypeScript**, allowing seamless integration of **Dropbox files** into applications, which enhanced user experience by simplifying document access and management.
- Optimized **document retrieval speed by 20%**, improving **error handling**, and enabling **better data synchronization** for seamless integration.

PROJECTS

Lifomation | *Angular, Express.js, Sequelize ORM, PostgreSQL, FAISS, OpenAI Embeddings, Textact, **Deployed on GCP***
- Developed an **advanced AI-powered document search engine** using **RAG** with **FAISS** and **OpenAI Embeddings**, enabling **semantic search, deadline-based retrieval and contextual recommendations**.
- Implemented **OCR-based document processing** with **Textact**, extracting key entities from scanned documents and improving search accuracy by 85%, which **attracted Sequoia Capital's interest, leading to an interview**.

AI-Generated Image Detection | *Python, PyTorch, TensorFlow, OpenCV, Weights & Biases, GitHub*
- Developed an **Ensemble Deep Learning Model** integrating **EfficientNet, ResNet, and Swin Transformer** using **Late Fusion**, improving **F1-score from 58% to 92%** on 19,986 images tested images.
- Engineered an **end-to-end training pipeline** in **PyTorch**, optimizing model performance with **Bayesian Optimization, Focal Loss**, and **advanced data augmentation** (MixUp, CutMix).

Quotis | *React, TypeScript, AWS S3, MongoDB, WebSockets, System Design*
- Architected and led the development of a **real-time social platform** connecting users with handymen, featuring **multimedia job postings, WebSocket-based messaging, and live arrival tracking**.
- Implemented **AWS S3 for secure file storage**, **MongoDB for scalable data management**, and a **React Native, TypeScript** stack for a responsive cross-platform experience, securing $4,000 in grants with **20+ freelancers** waitlisted.

Resumify | *React, MongoDB, Django, Firebase, GPT API*
- Developed an **AI-powered resume generator** using **GPT API**, automating resume creation with ATS-optimized formatting and real-time feedback.
- Designed a **scalable full-stack system** with **Django, MongoDB, Firebase**, enabling seamless user authentication, resume storage, and efficient document generation.

TECHNICAL SKILLS

Languages: Python, HTML/CSS, JavaScript, TypeScript, C, C#, C++, Java, Kotlin, R, Bash, Haskell, PHP
Frameworks: React, Node, Flask, Django, Express, Bootstrap, Expo, Mongoose, JUnit, Redux, FastAPI, TensorFlow, PyTorch, Scikit-learn, Pandas, NumPy, .NET, Langchain, Keras, Tesseract, NEXT, Angular, XGBoost
Databases: SQL, SQLAlchemy, Firebase, MongoDB, SQLite, AWS, Neo4j, PostgreSQL
Tools: GIT, GitHub, Linux, Docker, Agile, Android Studio, XCode, Unity, Ansible, OpenCV, Postman, OpenShift