Kody Chik

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Higher Education

Bachelor of Science in Computer Science at **The University of Toronto** **Graduation May 2025**

Professional Experience

Machine Learning Internship **C12.ai** **05/2024 - 08/2024**

- Developed **RAG (Retrieval Augmented Generation)** and **VLM pipelines** using **OpenAI**, **Langchain**, **LlamaIndex**, and more. Enhanced the query function for an **intelligent robot chemist**, improving retrieval accuracy and **efficiency** of answering **technical chemistry problems** by over **70%** by developing **metrics** and **benchmarks** to measure over **1,000 embedding**, **retrieval**, and **reranking** combination outputs with **advanced RAG capabilities** such as **agentic reasoning** and **behavior**.
- Utilizing **Computer Vision** technologies including **OpenCV**, **NumPy**, **Pytesseract**, **Selenium**, and **YOLO** to scrape data **headlessly** with **Docker** on a **Google Cloud** Platform Virtual Machine.

Research Assistant **University of Toronto** **09/2024 - 12/2024**

Collaborating with Professor Francisco Estrada, University of Toronto

- Implementing a **CNN-based architecture** for image denoising using the **York University dataset**, focusing on improving **image restoration** through **synthetic** and **real-world data**.
- Analyzing the impact of **network topology** and **training modes** on model performance by experimenting with various **configurations** and **datasets** to enhance training efficiency.

Research Assistant (Ongoing) **University of Toronto** **01/2024 - 05/2024**

Collaborating with Professor Irene Huang, University of Toronto

- Investigating **portfolio risk management** techniques, including foundational metrics like **Value at Risk** (VaR) and advanced methods like **Conditional GANs** (CGANs), comparing traditional **Monte Carlo simulations** with **deep learning approaches**
- Reproducing results from a CGAN-based default risk modeling paper using **Python** and **PyTorch**, validating findings on **financial datasets** and addressing challenges like **mode collapse and overfitting**.
- Design and train a modified CGAN architecture for **high-dimensional time-series data**, to achieve improved prediction accuracy and risk generalization, with real-world applications in portfolio volatility and default risk analysis.

Projects

RouteX | NextJS, ChakraUI, Python, Flask, OpenAI, PyTorch, Vercel, LocalStorage, GoogleMapsAPI, Docker, Cloud

- Designed and deployed a cutting-edge **natural language-based navigation app** that empowers users to generate **highly customized routes**, including scenic paths or optimized stops, seamlessly integrating the **Google Maps API** with **OpenAI's GPT for intelligent processing**.
- Delivered a **scalable MVP** that **reduced planning time** by **50%**, leveraging Docker and GCP for **robust cloud deployment** and **enabling real-time route adjustments** based on user preferences like fuel stops, time constraints, or personal interests.

Loan Eligibility | InternVL (VLM), Qwen, OpenAI, Hugging Face, NextJS, TailwindCSS, Python, Flask, RAG, NLP

- Developed a bank statement **loan eligibility tracker** leveraging **Vision-Language Models** (**InternVL-8B**) to extract **structured financial data** from PDFs, transforming raw documents into usable insights.
- Integrated a **Retrieval-Augmented Generation** (**RAG**) pipeline to analyze financial patterns and assess loan eligibility, achieving **80% user satisfaction** by enhancing accuracy and decision transparency.

e2echat | Java, Spring Boot, HTML, CSS, Javascript, Websockets, Stanford CoreNLP, Signal Protocol, E2EE

- Developed a **secure real-time** chat application that ensures user privacy by implementing **end-to-end encryption**, resulting in **100%** safeguarded communication, using **Java**, **Spring Boot**, **WebSockets**, and the **Signal Protocol**.
- Integrated for **real-time sentiment analysis** providing valuable **emotional insights** during conversations, achieving a **90% accuracy rate** in **sentiment classification** compared to human judgment, utilizing advanced natural language processing techniques from **Stanford CoreNLP** including **Bi-LSTM networks** and many more.

Skills

Languages: Python | C | C++ | C# | Java | Rust | HTML | CSS | Javascript | Assembly | Bash | Swift | Dart | Kotlin
Frameworks: Angular | React | Node.js | Tensorflow | Pandas | PyTorch | NumPy | Matplotlib | Scikit-learn | Langchain | Flutter | Flask
Tools: Git | PyCharm | Jupyter | VS | Unity 3D | Eclipse | Xcode | Jenkins | Android Studio | Figma | Docker | Matlab | AWS | Google Cloud
Databases: MongoDB | Firebase | PostgreSQL | ChromaDB and Pinecone (Vector Databases)