

# Yongkang Cheng

[chengyongkang.me](http://chengyongkang.me) | 437-663-2855 | [github.com/Ken-2511](https://github.com/Ken-2511) | [iwmain@outlook.com](mailto:iwmain@outlook.com) | [linkedin.com/in/chengyongkang](https://linkedin.com/in/chengyongkang)

## EDUCATION

- University of Toronto (St. George), Toronto, ON** Sep 2023 – May 2028 (expected)  
BASc in Computer Engineering + PEY Co-op (cGPA: 3.87/4.0, Score: 88.6/100)  
Relevant Courses: Applied Deep Learning Fundamentals (PyTorch), Software Design & Communication (C++), Computer Architecture, Operating Systems (ongoing), Algorithms & Data Structures (ongoing)

## EXPERIENCES

- Research Assistant, Spiking Neural Network Edge Device Deployment** Sep 2025 - Present  
*Research Intern, X-Lab, University of Toronto, ON*  
• Took over Verilog implementation of an SNN from a teammate; verified modules with ModelSim testbenches.  
• Quantized the CNN layers to 8-bit using TorchAO, working on post-training quantization on SNN layers, accelerating mixed-precision inference using HaLo-8 on Raspberry Pi for real-time low-power inference with small precision drop.
- Research Assistant, Ultra-Wideband Receiver Design** May 2025 - Jul 2025  
*Research Intern, X-Lab, University of Toronto, ON*  
• Collaborated in a 2-person team, verified a hybrid 4-PPM + 8-PSK TX chip pre-tapeout; built Python/Simulink pipelines for 2 ns symbol sync and carrier recovery under discontinuous 4.6 GHz.  
• Achieved error-free demodulation across 2,500 symbols under  $\geq 16$  dB SNR (AWGN) and  $\pi/16$  phase jitter.  
• Presented at Undergraduate Engineering Research Day with a [poster](#) and an interactive [demo](#), engaged 50+ attendees.

## PROJECTS

- Handwritten Text Recognition (CRNN)** Jun 2024 – Aug 2024  
*Course Project | PyTorch, OpenCV, TensorBoard*  
• Led a team of 4 to develop a PyTorch-based CRNN (ResNet-50 + BiLSTM) for handwritten text recognition on a RTX-4090, achieving 87% word- and 95% char-level accuracy on 10k+ samples.  
• Augmented IAM and CVL dataset with random distortions, and generated synthetic data using EMNIST characters.  
• Implemented connected-component word segmentation; 1024 x 1024 inference in <4s on CPU.
- City Mapify – Interactive Mapping Engine** Jan 2025 – Apr 2025  
*Course Project | C++, OpenStreetMap, GTK*  
• Built C++ mapping engine parsing 2GB OpenStreetMap data with QuadTree indexing at 60 FPS.  
• Implemented A\*/Dijkstra pathfinding and delivery optimization (Simulated Annealing, ACO) for 250+ packages.
- Self-Hosted Chatbot with Diary DB** Oct 2024  
*Personal Project | React, FastAPI, DDNS, Nginx, NoSQL*  
• Designed a journaling software with OpenAI API, generating insightful feedbacks for over 750 diary entries.  
• Deployed full-stack chatbot replicating personal style; configured TLS, DDNS, and reverse proxy for secure access.  
• Integrated OpenAI API and vector search for context-aware Q&A over personal diaries.

## SKILLS

- Languages:** Python, C/C++, Node.js, Java, Verilog, Assembly, MATLAB/Simulink
- Web/Backend:** React, FastAPI, Flask, Docker, Nginx, SQL/NoSQL
- ML/Data:** PyTorch, NumPy, OpenCV, Pandas, LangChain, MCP
- Tools:** Linux, Git, SSH, Firebase, Raspberry Pi, 3D Printing, STM32, Altium Designer

## AWARDS

- University of Toronto Excellence Award (UTEA)** Apr 2025  
\$7,500 scholarship for 6 students among 2nd to 4th ECE for summer research in X-Lab.
- ECE Awards** Sep 2024  
Awarded to top 30 students in the first-year ECE program out of 300+ students.