Yongkang Cheng

chengyongkang.me | 437-663-2855 | github.com/Ken-2511 | iwmain@outlook.com | 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 *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 HaiLo-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 *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 $\geq 16\,\text{dB}$ 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; 1024×1024 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.