Yongkang Cheng

chengyongkang.me | 437-663-2855 | github.com/Ken-2511 | iwmain@outlook.com | linkedin.com/in/chengyongkang

EDUCATION

University of Toronto (St. George Campus), Toronto, ON Sep 2023 - May 2028 (expected)
Bachelor of Applied Science in Computer Engineering + PEY Co-op
Relevant Courses: Applied Fundamentals of Deep Learning, Software Design and Communication

TECHNICAL SKILLS

- **Programming:** Python, C/C++, Node JS, Java, Verilog, Assembly(RISC-V)
- **Frameworks:** PyTorch, React, FastAPI, LangChain, MCP
- **Tools:** Linux, SQL/NoSQL, Nginx, Docker, Git, SSH
- **Hardware:** Arduino, Raspberry Pi, FPGA, LTSpice, Quartus, ModelSim, STM32
- **Data and Visualization:** NumPy, Pandas, Matplotlib

EXPERIENCE

Research Assistant, Ultra-Wideband Receiver Design (University of Toronto) Jun 2025 - Jul 2025
- Verified hybrid PPM+PSK TX pre tape-out; built Python/Simulink pipelines for 2ns symbol sync and carrier recovery under discontinuous 4GHz.
- Built pulse-position detection and K-means constellation calibration to mitigate cross-modulation timing shifts (˜100ps).
- Presented at Undergraduate Engineering Research Day with an interactive hybrid-modulation demo site.

Research Assistant, Wireless Power Transfer Coil Design (University of Toronto) Jul 2025 - Aug 2025
- Designed 13.56MHz WPT coils for a BCI implant (3mm×8mm RX, ˜20mm link).
- Ran HFSS sweeps (turns, trace size, TX diameter) to quantify impacts on coupling (k) and quality factor (Q).
- Produced PCB layouts with tuning plan; distilled design rules and prepared prototypes for validation.

PROJECTS

Project Lead, Handwritten Text Recognition (University of Toronto) Jun 2024 - Aug 2024
- Led a remote team to develop a PyTorch-based CRNN model for handwritten text recognition.
- Achieved 87% word-level and 95% character-level accuracy on the test set with 10,000+ samples.
- Deployed connected-pixel algorithms for word positioning and word segmentation, processing 1024×1024 images in less than 4 seconds.

City Mapify – Interactive City Mapping Application (University of Toronto) Jan 2025 - Apr 2025
- Developed a high-performance mapping engine in C++ to process OpenStreetMap data and render city maps.
- Designed efficient spatial data structures (**quadtrees**) for dynamic querying and smooth zoom-based rendering.
- Implemented advanced pathfinding algorithms (**Dijkstra, A*, Simulated Annealing, Ant Colony Optimization**) for route planning and delivery optimization.
- Integrated real-time features like day/night mode, weather data, and AI-powered route descriptions.

Diary with AI Feedback Sep 2023 – On Going
- Designed and implemented a journaling program integrated with OpenAI's GPT API, generating insightful feedback and suggestions for over 750 diary entries.
- Developed a diary sorting algorithm to retrieve contextually similar past entries by vector search, enhancing user experience and maintaining API costs below 0.2$ per call.
- Optimized data-sorting pipelines and API request processes, reducing average diary load time from 10s to 0.5s, enabling seamless daily use.

AWARDS & ACCOMPLISHMENTS

University of Toronto Excellence Award (UTEA) Apr 2025
- Awarded UTEA for top academic performance and research potential.
- Completed a 14-week full-time research project with faculty supervision.
- Received $7,500 scholarship for research excellence and inclusion.