YONGKANG CHENG

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EDUCATION

University of Toronto (St. George Campus), Toronto, ON Sep 2023 - May 2028 (expected)
Bachelor of Applied Science in Computer Engineering + PEY Co-op
GPA: 3.92/4.0 (Top 30 among first-year ECE students)
Relevant Courses: Applied Fundamentals of Deep Learning, Software Design and Communication

TECHNICAL SKILLS

- **Programming:** Python, C/C++, JavaScript/TypeScript, Java, Verilog, Assembly
- **Frameworks:** PyTorch, React, FastAPI, LangChain
- **Tools:** Linux, SQL/NoSQL, Nginx, Docker, Git, SSH
- **Hardware:** Arduino, Raspberry Pi, FPGA, LTSpice, Quartus, ModelSim
- **Data and Visualization:** NumPy, Pandas, Matplotlib

EXPERIENCE

Frontend Manager, Voluntrack.org (Non-Profit) | *React, Figma, MS Project* May 2024 - Present
- Led a 4-person team to redesign the web interface using React.js, improving user engagement by 20%.
- Designed UI in Figma and managed tasks with GitHub Projects and MS Project.
- Integrated Firebase for secure volunteer data storage and real-time search, allowing fuzzy search and filtering.

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.

Project Manager, Wellness Room Expansion (University of Toronto) Jan 2024 – Apr 2024
- Led a cross-functional team of 6 students to redesign and prototype a wellness room, endorsed by the client.
- Streamlined task management using Microsoft Project, tracking over 100+ tasks to completion on schedule.
- Incorporating client feedback, generated 100+ initial ideas and finalized 3 proposed designs.
- Designed and visualized proposals using Rhino and Blender 3D models, reducing client feedback iterations and improving decision-making efficiency.
- Conducted research on noise isolation, light intensity, and light temperature to deliver optimal design solutions.

PROJECTS

City Mapify – Interactive City Mapping Application (University of Toronto) Jan 2025 - Present
- 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*) for route planning and delivery optimization.
- Integrated real-time features like day/night mode, weather data, and AI-powered route descriptions.
- Enhanced performance with multithreading (OpenMP) and RESTful API integration (libcurl).

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 570 diary entries.
- Developed a diary sorting algorithm to retrieve contextually similar past entries, 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.

Verilog Pac-Man Game (University of Toronto) Nov 2024
- Created a Pac-Man-style FPGA game using Verilog supporting PS/2 keyboard input and VGA output.
- Debugged signal synchronization issues and state-machine logic, boosting overall stability and playability.
- Automated image conversion using Python + OpenCV for seamless integration of game graphics.
- Prototypeed the game using Pygame, ensuring accurate emulation of the FPGA version for agile development.

WillPower | Time Management & Monitoring Jan 2025 - Present

- Built a modular system with Raspberry Pi capturing images and sending them to a Windows host for local storage and analysis.
- Deployed Nginx, FastAPI, and libcurl for data transfer, facilitating real-time user monitoring and minimal downtime.
- Currently exploring Azure Face APIs and transfer learning for user-behavior analysis on a dataset of over 20,000 images.

Self-Clone Chatbot with Diary Database Oct 2024 - Present

- Built a self-hosted AI-powered chatbot that replicates personal interaction styles, deployed using React.js, FastAPI, and Nginx on a Raspberry Pi.
- Integrated OpenAI API and a NoSQL database for real-time Q&A functionality with personal diary data.
- Ensured secure and seamless remote access by implementing TLS encryption, DDNS, and optimizing for daily traffic from personal networks.

RainBirthdayGift – AI-Driven Chatbot April 2024

- Built a GPT-4-powered chatbot in 3 days using C#, .NET, and WPF framework as a gift for a friend.
- Integrated OpenAI API to enable real-time conversations, designed with a dynamic WPF interface using XAML.
- Enhanced experience by customizing UI with role-based colors and responsive message display.
- Implemented efficient asynchronous API calls to ensure smooth user interactions.

AWARDS & ACCOMPLISHMENTS

ECE Awards & Dean's List Scholar (UofT) Sep 2024

- Recognized for outstanding academic performance (GPA 3.92/4.0).

American Computer Science League (ACSL) - Bronze Prize Jan 2021

- Placed in top 10% overall, with top-20% scores in the 4th round, after 60 hours of training.