

CERA WANG

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EDUCATION

University of Waterloo | Computer Engineering, BSc

Sep 2023 - Mar 2027 | Waterloo, Ontario

TECHNICAL SKILLS

Languages: Python, C++, Java, JavaScript, HTML/CSS, Matlab, VHDL, LaTeX

Frameworks/Libraries: OpenCV, React, Node.js, Vite, Flask, Bootstrap, MediaPipe, ROS2, NumPy, Pandas, EasyOCR

Dev Tools: Docker, Postman, Git, AWS, Raspberry Pi, Jetson Nano, STM32, FPGA, Arduino, Oscilloscope, AutoCAD

EXPERIENCE

Robotics Software Developer | Bash, C++, Python, Docker, Git, NumPy, Pandas

Jun 2024 - December 2024

Rapyuta Robotics

Tokyo, Japan

- Implemented dynamic **obstacle avoidance** in ROS2 with **finite state machines**.
- Created a **3D R-tree** structure for **spatial indexing** of robot paths during dynamic navigation, improving pathfinding accuracy and optimizing query time complexity from $O(n)$ to $O(\log n)$.
- Designed a master controller that integrates a **6-component pipeline** for automatic analysis and optimization of production performance, currently utilized by **>3 clients** and internal teams.
- Co-developed a **metaheuristic genetic evolutionary algorithm** with varying chromosome length to optimize ASRS layout, addressing **non-convex and multi-modal blackbox optimization** challenges.

Embedded Programmer + Graphic Designer | C++, Python, Raspberry Pi, Jetson Nano

Jun 2022 - Sep 2023

LoopX

Waterloo, Ontario

- Integrated Lidar activated LED strips with C++ in ROS, utilizing **Raspberry Pi** and **Jetson Nano**. Programmed LED screens in **Python**.
- **UI/UX design** of the **LoopX website** and the **AI platform AISear** with **Adobe PS, Figma**, and **Procreate**. Created marketing media like the **GoosEx logo**, posters, flyers, stickers, business cards, shirts, social media banners.

Developer | Python, JSON

Jun 2022 - Oct 2022

OpenPrinciples

Waterloo, Ontario

- Designed and implemented a robust **data engineering pipeline** in **Python** to facilitate analytics.
- Adjusted code-based **backend and frontend** development in **Python** for UltraBrain (an AI and human hybrid assistant) optimizing algorithmic functionality and ensuring enhanced productivity and user experience.

PROJECTS

ShoeBill | Vite, Python, HTML5, CSS, SQL, Django, Mediapipe, OpenCV

Calhacks 10, UC Berkeley | Oct 2023

- Built a **full-stack web application** using **Python, Django**, and **HTML5**.
- Combined usage of the **Hume API** for **computer vision** based facial expression tracking and the **Amazfit Zepp smartwatch API**, achieving **watch-to-webapp messaging** and **biometric data** acquisition (heart rate and breathing).
- Built the front-end using **Vite**, facilitating **live updates on UI**.

ReadBetter | AWS, Assemblyai, HTML/CSS, EasyOCR, Flask, Pypdf2, Zeet

Jun 2023

- Developed a bionic reading **web-application** to improve reading speed by providing artificial fixation points.
- Utilized multiple **APIs** - Assemblyai, EasyOCR, Pypdf2 - to extract from **speech, text, and images**.
- Built a **full-stack** application with **Python and Flask** and hosted with **AWS**.

HealThyme | Azure, Azure-Maps, HTML/CSS, React.js, Microsoft-Cloud

Hack The Valley 7, UofT | Oct 2022

- Used the **Azure Maps** geospatial platform to integrate a **geolocation** feature for nearby walk-in clinics, granting users **real-time accessibility** to healthcare services.
- Constructed a robust **backend and database**, managing location and personal data.
- Crafted an interactive and responsive **frontend** with **React.js**.