

# Changyu Chen

[https://changyu123chen.github.io/Changyu\\_Website/](https://changyu123chen.github.io/Changyu_Website/)

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## SUMMARY

- ★ Skills: C++, C, Python, AI, Reactjs, Nodejs, CSS, HTML, Verilog, STM, Arduino, Git.
- ★ Passion for apply concepts of computer engineering to workplace.
- ★ Proficient in embedded software, real-time operating system design, web design, and QA.
- ★ Proficient in Microsoft and Google-Suite
- ★ Strong resilience to pressure
- ★ Effective Research and Problem-Solving Skills (ChatGPT, Stack Overflow)

## EXPERIENCE

### Web Developer Intern

- January 2025 - April 2025      Dawnergy Technologies (Shanghai) Co Ltd      Shanghai, China
- Built a full-stack auction-style crowdfunding platform (React, Express, MySQL) under mentorship during internship downtime.
  - Designed and implemented bidding logic with lowest-unique-bid selection, auction progress tracking, and round-based participation.
  - Wrote end-to-end tests using Playwright to verify critical flows including registration and bidding.
  - Used GitHub for version control, collaborating through feature branches and regular commits.

### Software Development Assistant

- January 2024 - April 2024      Skyline Technology Limited      Accra, Ghana
- Set up a CentOS environment, configured user accounts, and integrated a solar application website into the system.
  - Configured port mapping to ensure the website is accessible in web browsers.
  - Maintained website stability, ensuring continuous uptime and connectivity.
  - Communicated with international staff to provide regular updates on website performance and status.
  - Troubleshoot issues related to website accessibility across different browsers and identified effective solutions.

### IT QA Assistant

- Jan 2023 - August 2023      Ontario Ministry of Education      Toronto, ON
- Resolved a critical issue on the PFAAM website causing submission failures with funding parameters.
  - Performed SQL testing and used Selenium to ensure site functionality.
  - Created Python reports to assist in issue resolution.
  - Collaborated with the team to improve website performance.
  - Trained new co-op students and employees, enhancing team efficiency.

### Manulife - Web Application Designer

- May 2022 - August 2022      Waterloo Experience (WE) Accelerate Program      Waterloo, ON
- Developed custom payment pages for Ostar Education using Node.js, React.js, APIs, and front-end technologies.
  - Integrated PayPal and Alipay SDKs for seamless payment processing.
  - Collaborated on user-friendly design with CSS and HTML.
  - Ensured a smooth user experience through testing and debugging with Postman.

## SIDE PROJECTS

### Capstone Project

March 2025 - Present

Team Project · Arduino · platformIO · C++ · Computer Vision · Signal Encoding

- Designed and implemented a beacon system using Arduino to generate Gold Code light sequences on RGB LEDs for visual detection and localization.
- Used PWM control and LFSR-based logic to produce distinguishable long bit Gold Codes with high temporal uniqueness across multiple LEDs.
- Created synchronization patterns for multi-LED setups, enabling robust detection via camera-based vision systems in noisy environments.

### **MirrorSelf – AI-Driven Habit Forecasting App**

**May 2025 - Present**

Solo Project · Flutter (Frontend) · Python FastAPI (Backend) · scikit-learn · AI simulation

- Designed an ML-based simulator that predicts long-term consequences of daily habits using a Random Forest Classifier.
- Collected labeled behavior samples and trained a supervised model to classify potential outcomes under varying user traits.
- Implemented a Python backend with FastAPI, and integrated model predictions with a Flutter mobile frontend.
- Focused on interpretable AI design to promote user insight, combining algorithmic forecasting with personalized UX.

### **Paint by Numbers Generator (Python) November 2024 - Present**

Solo Project · Python · OpenCV · scikit-learn · Image Processing · KMeans Clustering

- Developed a tool that converts user-uploaded images into color-by-number templates using unsupervised learning.
- Applied KMeans clustering to segment images into dominant color regions, assigning each a unique number label.
- Used OpenCV to extract contours of clustered regions and overlay numbered masks for printable output.
- Enabled adjustable color granularity and image resolution scaling for optimized clarity and printability.

### **Interprocess Communication and Concurrency (C++) September - October 2023**

- Addressed a producer-consumer problem in a Linux environment by leveraging shared memory.
- Employed semaphore and mutex mechanisms to prevent race conditions and deadlocks.
- Extracted PNG strips from three distinct websites, concatenated them and generated a single PNG file as the output.

### **Multi-threaded Programming with Blocking I/O October - November 2023**

- Implemented multi-threaded programming techniques to concurrently retrieve image strips from three websites while efficiently handling blocking I/O operations.
- Successfully concatenated the retrieved image strips and output them as one PNG file.
- Used Git commands to version control the project and upload it to GitLab.

### **Personal Game Development August - September 2023**

- Developed a captivating Earth and Moon Space view using Blueprints and C++ within Unreal Engine 5, demonstrating proficiency in UE5 and game development concepts.

## **EDUCATION**

University of Waterloo

September 2021 - April 2026

**Bachelor of Applied Science in Computer Engineering**

## **AWARD**

President's Scholarship, University of Waterloo, Waterloo, ON

March 2021

Awarded for reaching an average between 90% and 94.9% in high school courses.