

# Charlie Chen

(484) 686-1251 | [charliechen@college.harvard.edu](mailto:charliechen@college.harvard.edu) | [github.com/cchenalds17](https://github.com/cchenalds17) | U.S. Citizen

## EDUCATION

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### Harvard University

Cambridge, MA

**Bachelor of Science in Electrical Engineering** | GPA: 3.95/4.0

May 2027 (expected)

- Relevant Courses: Intro to Distributed Computing, Intro to Electrical Engineering, Systems Programming, Data Structures & Algorithms, Intro to Machine Learning (MIT), Intro to Probability, Linear Algebra, Multivariable Calculus

### Friends Select School

Philadelphia, PA

High School Diploma | GPA: 4.31/4.0, Phi Beta Kappa | Student President, Robotics Club Founder

June 2023

## PROJECTS ([CCHENALDS17.GITHUB.IO](https://cchenalds17.github.io))

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### Ray Tracing Engine | C++

Feb. 2025

- Built ray tracer from scratch in C++, implementing recursive algorithms for reflections, refractions, & light scattering
- Optimized rendering using efficient data structures and anti-aliasing techniques, producing photorealistic images
- Demonstrated a strong grasp of computer graphics principles and computational geometry

### Client-Server Chat App | Sockets, Custom Protocol, JSON, gRPC, SQL, Python

Feb. 2025

- Developed chat app with real-time message delivery with offline queuing, secure account creation, and authentication
- Designed & implemented JSON-based and custom wire protocol (10+ times throughput increase) using sockets
- Re-architected the system with gRPC, evaluating impacts on client/server structure, testing, and overall performance
- Engineered server daemon and multi-threaded user process to query SQL database & manage multiple users in parallel

### Mask Detector | PyTorch, OpenCV, MobileNetV2, Arduino, C

Sept. 2021 – Dec. 2022

- Optimized MobileNetV2 model with PyTorch to detect unmasked faces with 91% accuracy and spray them with water
- Engineered Arduino circuit that processed analog laptop inputs to control digital relay outputs, activating a spray bottle

## EXPERIENCE

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### Harvard Tech for Social Good | Cambridge, MA

Sept. 2023 – Present

Project Manager – UNICEF: GeoSight SDMX Data Warehouse Integration

- Developed React-based data pipeline, enabling dynamic filtering for SDMX data from UNICEF Data Warehouse
- Led code reviews for 5 SWEs, ensuring clean code and effective client communication through iterative design process
- Work showcased at the OSGeo's 2024 FOSS4G Conference, highlighting modern open-source geospatial data solutions

Software Engineer – Darsel: Personalized Learning Algorithm

- Optimized XGBoost to 80% accuracy via data cleaning, feature engineering, & tuning, enhancing 100K+ user experiences

### University of Pennsylvania Wharton School | Philadelphia, PA

June – Aug. 2022

Research Intern

- Enhanced BERT/FinBERT models via preprocessing & fine tuning, achieving 93% prediction accuracy of text readability

## TECHNICAL SKILLS

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**Languages:** Python, C++, JavaScript, TypeScript, HTML/CSS, SQL, LaTeX

**Frameworks & Tools:** PyTorch, NumPy, Matplotlib, Pandas, OpenAI API, Git, React, Next.js, Supabase, Flask, Django REST Framework, Tailwind, Bootstrap, VS Code, Jupyter

**Skills:** Microcontrollers, Circuits, Raspberry Pi, Soldering

## OTHER

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**Harvard Radcliffe Orchestra** | Trumpet Player

Sept. 2023 - May 2024

**Fluent Languages:** English, Mandarin

**Special Skills:** Trumpet, Piano, Cooking, Speedcubing