

Tyrone Marhguy

Computer Engineering @ UPenn | Full-Stack Development & Systems Software Engineering

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tmarhguy.github.io/tmarhguy

Education

University of Pennsylvania

Philadelphia, PA

B.S.E. in Computer Engineering (Expected May 2028)

Aug 2024 – May 2028

Planned: M.S.E. in Electrical Engineering (Dual Degree Track, Aug 2026 – May 2028)

Relevant Coursework: Programming Languages & Techniques I & II; Data Structures & Algorithms; Discrete Mathematics; Linear Algebra; Probability; Calculus III; Intro to Computer Systems; Electrical Circuits & Systems

Selected Pre-University Achievements: Gold Medal — American Mathematics Olympiad (2023); Silver Medal — Vanda Science International Olympiad (2023); WASSCE: 8 A1 Grades (1 of 465 all-A scorers among 2.2M candidates)

Technical Skills

Programming Languages: Python, C++, C, TypeScript/JavaScript, Java (familiar), Go (familiar), Bash/Shell

Systems & Embedded: Device Drivers, RTOS Concepts, Integration Testing, Requirements Specification

Web & App Frameworks: FastAPI, React/Next.js, Node.js, Tailwind CSS, Radix UI

Data & Cloud: PostgreSQL, Redis, MongoDB, AWS, Azure, Docker

ML & Analytics: scikit-learn, XGBoost, pandas, NumPy, SHAP, Feast

DevOps & Testing: Git/GitHub, GitHub Actions (CI/CD), Pytest, Jest, Agile/Scrum, Code Reviews

Other Tools: OAuth2 & JWT, D3.js, Documentation, Compliance Standards

Projects

UniBridge Ghana — Centralized University Admissions Prototype

Project Link

- Designed and implemented Ghana's first centralized admissions platform with **FastAPI**, **Next.js 14**, **PostgreSQL**, **Redis**, unifying multi-university applications and achieving **0.8s FCP** and **1.4s Speed Index**.
- Collaborated cross-functionally to integrate secure document workflows via **OAuth2 authentication**, **AES-256 encryption** and authored 120+ automated tests (**92% coverage**) deployed through **Docker + GitHub Actions**.

Music & You — Personality ML Platform

Link

- Developed full-stack ML app predicting Big Five traits from **300+ Spotify tracks/user** with **35+ features**.
- Deployed 16-endpoint API with real-time dashboards and sub-5s predictions.

MoMo Credit Score — FinTech Analytics

Link

- Led mobile money credit scoring system (**FastAPI microservices**, **XGBoost**), achieving **AUC 0.82**.
- Delivered React dashboard with SHAP explainability, ensuring **compliance** with data standards.

SVD Image Compression

Link

- Implemented **Next.js + TypeScript** app with per-channel SVD for real-time rank-*k* reconstructions.
- Optimized performance (CLS=0, Lighthouse 90/73/100), supporting 20MB+ uploads and 45% faster processing.

Experience

Teaching Assistant, CIS 1100

August 2025 – Present

University of Pennsylvania

Philadelphia, PA

- Mentored **300+ students** in Python through recitations, office hours, and live debugging, fostering collaborative problem-solving and clear communication.
- Enhanced course infrastructure by creating 50+ Pytest autograders, supporting **integration testing** and improving grading consistency.

Computer Science Intern

May 2025 – August 2025

Heag Pain Management

Greensboro, NC

- Engineered a HIPAA-compliant **FastAPI + PostgreSQL** platform digitizing **12+ intake workflows**, reducing manual entry time by over 50%.
- Improved Python + SQL reporting pipelines, collaborating with cross-functional teams to refine **specifications** and align outputs with business needs.

Leadership & Activities

Google Developer Groups @ Penn & Penn Aerospace Club

Sept 2024 – Present

Designed microcontroller systems and Python ML dashboards for weather forecasting, used by **20+ members** in collaborative research projects.

ColorStack @ Penn & National Society of Black Engineers

Sept 2024 – Present

Facilitated mentorship, professional development, and technical workshops, contributing to an inclusive and growth-oriented engineering community.