JOSEPH GETACHEW

(317) 308-0071 | josephgetachew8@gmail.com | linkedin.com/in/jgetache | github.com/getachewjoseph

EDUCATION

Purdue University **Expected Graduation: Spring 2027**

B.S. in Computer Science — Minor Mathematics *West Lafayette, Indiana*

- **GPA: 3.73** — 4x Dean's List
- Courses: Data Structures & Algorithms, Analysis of Algorithms, Object Oriented Programming, Operating Systems, Relational Databases, Competitive Programming, Systems Programming, Computer Architecture

WORK EXPERIENCE

Raytheon Technologies **August 2025 – Present**

Undergraduate Researcher *West Lafayette, Indiana*

- Accelerating real-time RF signal classification by developing **GPU-powered Python scripts** using **NumPy, CuPy, and CUDA** to enable high-throughput parallel analysis for in-flight applications.
- Building and validating robust signal classifiers by applying **signal processing** techniques in **MATLAB** and constructing **machine learning models** with **scikit-learn and PyTorch**.
- Collaborating with the **Cognitive Algorithm Deployment System (CADS)** team to integrate models into a scalable, defense-grade **C++ and Python** pipeline for potential live flight deployment.
- Operating within an **Agile (Scrum)** environment, participating in sprint reviews and utilizing **Matplotlib/Seaborn** to validate model performance against collected RF datasets.

AIM Research Team (Artificial Intelligence in Music) **May 2025 – August 2025**

Undergraduate Researcher *West Lafayette, Indiana*

- Assisted in development of posture assessment tools in **Evaluator**, a mobile app using **Python, TensorFlow, and OpenCV**, tested with 20+ musicians
- Designed a **shoulder alignment classifier** using **MediaPipe**, **NumPy**, and geometric heuristics, achieving **92% precision** in detecting unbalanced posture
- Trained and deployed a **low-elbow detection model** in **TensorFlow**, achieving **94% accuracy** and reducing false negatives by **36%** compared to baseline

PROJECTS

FallGuard | React, Node.js, Express, PostgreSQL **June 2025 – Present**

- Selected as **1 of 8 semi-finalist startups** (from 100+ applicants) in the 2025 Indiana Healthcare Innovation Challenge for a full-stack fall prevention web application.
- Engineered a secure caregiver-patient portal using **JWT authentication** and a **PostgreSQL** backend, reducing patient onboarding time by **60%** through a referral code system.
- Developed a dynamic, interactive map of local prevention events using the **Google Maps API** and designed an educational portal with **React and Tailwind**, boosting user engagement by **40%**.

Simple C Compiler | C, x86-64 Assembly, Yacc, Lex **October 2024 – December 2024**

- Developed a compiler for SimpleC in **C** supporting pointer and primitive types, generating **x86-64 assembly** for **Linux systems**
- Implemented full **expression parsing** and code generation using **Lex/Yacc** on a **Linux toolchain**, handling arithmetic, logical operations, and type checking
- Engineered a **register allocation system** simulating a stack machine in **C**, and tested generated binaries in a **Linux shell environment**, improving efficiency in memory/register usage

LEADERSHIP EXPERIENCE

ColorStack Academic Leader **September 2024 – Present**

- Mentor underrepresented students in **CS & Engineering**, offering academic and career guidance
- Lead weekly **technical workshops** on core CS topics including data structures and programming fundamentals
- Coordinate with industry pros to host **networking events** and promote opportunities with tech companies

TECHNICAL SKILLS

Languages: Java, C, C++, Python, JavaScript, TypeScript, SQL, HTML, CSS, Tailwind
Frameworks/Tools: React.js, Node.js, Express, PostgreSQL, MongoDB, LaTeX, Git, Linux
Libraries: MediaPipe, YOLO, Pandas, Selenium