

Elijah Tharakan

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EDUCATION

The Pennsylvania State University

University Park, PA

B.S Computer Science | B.S Electrical Engineering, Minor in Mathematics & AI Engineering

Exp Grad. Dec 2026

Cumulative GPA: 3.6

Relevant Coursework: Neural Networks, Embedded Systems for AI, Data Structures and Algorithms, Electronic Circuit Design, Computer Organization And Design, Operating Systems Design & Construction

TECHNICAL SKILLS

Technologies: TensorFlow, React, Node.js, Flask, OpenCV, pandas, NumPy, Arduino, STM32

Languages: Python, C/C++, Java, JavaScript, SQL, Verilog, LabView

Tools: Git, AWS (EC2, RDS, S3), Docker, VS Code, PyCharm, Fusion360

EXPERIENCE

AI Engineer

May 2025 – Present

IBM

Philadelphia, PA

- Engineered 3 production-ready AI pilots using IBM Granite 3.3 and Llama 3.3, processing 1M+ customer queries with 87% accuracy, validating \$1.5M+ solution feasibility for Fortune 500 clients
- Optimized LLM inference pipeline through prompt engineering and caching strategies, reducing API costs by 40% while maintaining 95th percentile response time under 1.5 seconds
- Partnered with product and consulting teams to define 12+ KPIs for AI pilots (accuracy, latency, cost-per-query), delivering bi-weekly technical reports that influenced roadmap prioritization and feature development

Student Researcher

Sep 2025 – Present

E-Bio-E Laboratory

State College, PA

- Engineered Python-based data acquisition interface for electrochemical glucose biosensors, achieving 1000+ samples/hour throughput with 99.3% accuracy using custom signal processing algorithms
- Designed Arduino-based robotic sample handling system, automating 8-step testing workflow and reducing manual intervention from 15 minutes/sample to zero, enabling unattended overnight testing
- Implemented LSTM-based predictive model using TensorFlow to forecast sensor degradation with 89% accuracy, enabling proactive maintenance and extending sensor lifetime by average of 2 weeks

PROJECTS

Smart Soldering Station | *Python, React, HTML/CSS, OpenCV, Fusion360* September 2025 – December 2025

- Engineered smart soldering station with integrated fume extraction, automated PCB positioning, and adaptive lighting, reducing setup time by 60% and improving workspace ergonomics, winning entrepreneurship competition
- Implemented real-time hand gesture recognition using OpenCV and MediaPipe, enabling touchless control of 5 station functions (fume speed, lighting, PCB rotation) with 94% gesture classification accuracy

Pipelined CPU | *Verilog, MIPS, Matlab, Python*

January 2025 – April 2025

- Designed 5-stage pipelined MIPS processor in Verilog (IF/ID/EX/MEM/WB) supporting 30+ R-type, I-type, and J-type instructions with full hazard detection and data forwarding logic
- Implemented branch predictor and forwarding unit, reducing pipeline stalls by 65% and achieving 3.8x speedup over single-cycle baseline on sorting and matrix multiplication benchmarks

AI Course Scheduler and Advisor | *Python, Flask, React, AWS, HTML/CSS*

March 2024

- Architected a full-stack web application using a React frontend and Flask backend that leverages OpenAI GPT-4 API to provide students with personalized, AI-driven course registration roadmaps
- Deployed application on AWS (EC2, RDS, S3) with 99.9% uptime, winning 1st place at HackPSU Spring 2024 among 50+ competing teams for technical execution and user impact

LEADERSHIP

Institute of Electrical and Electronics Engineers | *President*

March 2024 – Present

- Led a 8-person executive board for a 150+ member chapter, managing multiple teams and committees
- Started a new design initiative, securing \$5,000 in corporate sponsorship for a university-wide robotics competition