Atharva Pandhare

Atharva509@gmail.com • (908) 500-6868 • github.com/AtharvaPan265 • linkedin.com/in/atharvapan • atharvap.com

EDUCATION

Rutgers University **Expected: Jan 2026**

M.S. Electrical and Computer Engineering - Computer Engineering Specialization *New Brunswick, NJ*

B.S. Electrical and Computer Engineering

- **GPA:** 3.9/4.0
- **Graduate Certificate:** Socially Cognizant Robotics
- **Relevant Coursework:** Embedded Systems 1 & 2 - Hardware & Software Design, Parallel and Distributed Programming, Mobile Embedded Systems and on-device AI, Deep Learning, Socially Cognizant Robotics, Cloud Computing

EXPERIENCE

Calix **May 2025 — Aug 2025**

FPGA Design Intern (AI/ML Hardware Integration Focus) *Plymouth, MN*

- Fine-tuned small language models (270M-1B parameters) for edge deployment and hardware integration using SFT and distillation
- Assessed LLM capabilities for HDL and testbench generation, establishing that performance degraded significantly with design complexity.
- Prototyped multi-agent AI workflows for decentralized network management & automation using LangGraph, and Model Context Protocol
- Developed a GraphRAG-based assistant using Cognee to provide actionable design guidance for unfamiliar components

Rutgers University **Jan 2024 — Present**

Teaching Assistant for Embedded Systems *New Brunswick, NJ*

- Oversaw student demonstrations ensuring alignment with learning objectives and engineering fundamentals
- Graded and provided feedback on C and VHDL assignments for 40+ students across two course sections
- Tested lab materials to ensure compatibility with school resources
- Held regular office hours to reinforce and fill gaps in student learning

YodaTrader **Jun 2023 — Aug 2023**

Software Engineering Intern *Remote*

- Designed functions in python to automate order placements using the Interactive Broker REST API.
- Designed and backtested algorithms over two years of market OHLC data collected using Polygon's REST API.
- Containerized the application for cross-platform deployment using Docker and Compose
- Established an in-memory backend using Redis for request handling and queuing.

PUBLICATION

Cloud-Connected Human-Drone Interface for Intuitive Navigation **ieeexplore.ieee.org/document/10791117**

IEEE International Symposium on Consumer Technology 2024

- Designed an innovative interface enabling intuitive drone navigation through digital mapping.
- Programmed custom flight controller in C for Raspberry Pi Pico, implementing PWM motor control and UART instruction processing
- Wrote a lightweight protocol to encode and transmit flight data over Long-range Radio (LoRaWAN) communication.
- Designed system architecture using Redis for real-time command queuing and direct LoRaWAN routing to eliminate gateway dependencies

PROJECTS

- **Agentic AI Mental Health Assistant:**
  Developed Gemini ADK multi-agent system integrating computer vision, conversational AI, and generative diffusion for mental health support
- **CUDA-Accelerated Image Classification:**
  Achieved 98% accuracy on MNIST dataset using parallelized K-Nearest Neighbors with 48x speedup (75 seconds vs 1+ hour on CPU)
- **Embedded AI Chatbot:**
  Configured PetaLinux to support Ethernet, SSH, Python, and package management for OpenAI API integration on a Zynq 7000 FPGA/SoC
- **Formula-Style Active Rear Wing:**
  Developed real-time Raspberry Pi control system for automated spoiler 2-axis tilting using acceleration and gyro inputs and servo motors
- **FPGA Communication Systems:**
  Implemented VGA display controller and UART protocol in VHDL on Zynq-7000, achieving reliable 115200 baud serial communication

LEADERSHIP

Rutgers IEEE **Sep 2024 — Present**

eCTF Lead Developer *New Brunswick, NJ*

- Co-lead Rutgers University's first-ever team in MITRE's Embedded Capture-the-Flag Competition.
- Ran crash course sessions in topics ranging from Linux CLI and scripting to C/C++ for 15+ team members

Collaborative Solutions LLC **Rutgers Externship Exchange** **Jun 2022 — Aug 2022**

Team Lead (Outstanding Team Lead Award) *Remote*

- Led and facilitated communication and collaboration among nine advisors and team members.
- Created ten deliverables using Research and analysis facilitated by PowerPoint, Excel, and Python.

SKILLS

- **Programming Languages:** C/C++, Python, VHDL/Verilog, Bash, Tcl, RISC-V Assembly, MATLAB
- **Hardware & Embedded:** FPGA/RTL Design (Xilinx, Terasic), Baremetal Programming, Petalinux, Vivado, Vitis
- **Machine Learning & AI:** PyTorch, TensorFlow, LangChain/LangGraph, Ollama, Unsloth, Huggingface, CUDA, NumPy, Pandas
- **Development Tools:** Linux, Docker, Git, GDB, Conda/venv, uv, QuestaSim
- **Hardware Tools:** Oscilloscope, Signal Generator, Soldering, 3D Printing, SolidWorks