AYMAN SANDOUK

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INTRODUCTION

Graduate student, researcher and instructor. As a computer scientist and electronics enthusiast, I excel in problem-solving and possess strong work ethics. My experience includes working on high performance computers, LLM APIs, evaluating LLMs, running computer science courses and labs at the University of Rhode Island, developing an assembler and linker and being a SCRUM master for a mobile app project that launched a beta version on Google Play Store. I am currently focused on understanding Machine Learning and Large Language Models development and advancements and working on benchmarking both.

EDUCATION

Community College of Rhode Island Warwick, RI - **AS in Computer Programing - GPA: 3.6** May 2022
University of Rhode Island Kingston, RI - **BS in Computer Science - GPA: 3.21** December 2023
University of Rhode Island Kingston, RI - **MS in Computer Science - GPA: 3.89** May 2026

PROJECTS

BenchTools January 2025

- Discussed and studied best practices for developing, describing and maintaining LLM and ML Benchmarks and logging results
- Designed a command line tool that assists researchers and developers initiate, tailor and modify benchmarks then run them

fairnessBench September 2024

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URI's Open Humanists June 2025 - October 2025

- Collaborated on building and teaching an open-source workshop for humanists to work on open-source projects
- The workshop is being submitted to be a part of the open-source carpentries workshops

RUMasm January 2023 - March 2024

- Collaborated on building a macro assembler, in Rust, for a RISC-style virtual machine, Rust Universal Machine (RUM)
- Designed an algorithm for linking multiple source files into one binary executable with relocation entries

COURSEWORK

Evaluate Explain Artificial Intelligence:

- Learn about the concept of benchmarking and evaluation, better practices and limitations
- Discussed the explanations of LLM and other ML model decisions on predictions or word generation

Large Language Models:

- Explored in-depth the foundations of Natural Language Processing and Transformer-based architectures such as GPT
- Created smaller versions of the latest architectures used in these similar LLMs
- Implemented fine tuning techniques of LLMs such as ChatGPT, Llama, Deepseek via Low Rank Adaptations and QLORA
- Employed vector databases to aid LLMs in their knowledge by using the Retrieval Augmented Generation (RAG) technique

Machine Learning:

- Understood the development and study of algorithms that can learn from and make predictions or decisions based on data
- Investigated how ML and NN power state-of-the-art systems in natural language processing, computer vision, and other applications
- Implemented and evaluated machine learning models using modern tools and frameworks

Bioinformatics:

- Interacted with practitioners from different disciplinary to prepare for work in a environment of multidisciplinary project
- Implemented a bacteria classifier using an existing ML transformer model to classify a bacteria's phylum from its DNA

Software Engineering Capstone Project "Typus": A mobile game that records typing time and accuracy and holds a leaderboard

- SCRUM master for a team of 4 who developed a full-stack app in a collaborative SCRUM agile environment
- Collaborated on building the frontend which was developed using a UI design tool that generates React Native code
- The backend employed Google Firebase incorporating features like Authentication, Real-time Database, and Cloud Functions
- Developed and deployed a cloud function in JavaScript that calculates Levinshtein's distance between two string entries
- Developed and deployed a cloud function in Python that formats and sorts data entries. Tested both using Postman.

- Leveraged Git & GitHub for collaborative version control practices, project tracking through GitHub project, bug tracking with GitHub issues, documentation with GitHub Wikis and user-facing web content with GitHub pages

Computer Systems & Programming Tools:

- Designed a tool using Python and Bash scripts that collects information about open pull requests within a GitHub repository and their associated issues. The tool will help the professor with the grading process for the class enhancing overall efficiency

Other Coursework:

- Machine Organization: Assembly analysis, code profiling, building systems, implemented a 32-bit virtual machine
- Database Management Systems: Database basics, ERD, SQL, relational algebra
- Design and Analysis of Algorithms: Sorting, searching including hashing and balanced trees polynomial and matrix calculations, graph and network algorithms

PROFESSIONAL EXPERIENCE

Brown University: Providence, RI June 2023 - August 2023

Software Engineering Intern at the Office of Informational Technology, Business Systems & Integration Team

- Designed a system for validating data-record files and outputting detailed error messages
  - Designed spec-files using JSON formatting to be used to set constraints for these records
  - Implemented and tested the record validating algorithm in Python
- Built a RESTful API that implements the data-file validation algorithm on MuleSoft Anypoint Studio
  - Processed medical staff and students' records to proactively identify common errors accounting for specific requirements
  - Filtered the records before sending them to the recipient to prevent the files from being rejected by the recipient's software
- Mentored junior intern, managed tasking and provided training on using Git and GitHub

University of Rhode Island: Kingston, RI - **Instructor, Teaching Assistant** January 2023

- Ran Computer Systems & Programming tools; a course of 30 students that prepares for high-level programming concepts
- Ran two labs of 20 students each guiding exercises in C & C++, reinforcing key concepts such as stack & heap, memory allocation, pointers, multi processing, multi threading, mutex locks, piping and managing shared memory segment
- Led office hours to explain ideas discussed in class and guide students in learning a new programming language
- Graded students' assignments while providing detailed feedback on errors and misconceptions found in them

Best Buy: Warwick, RI - **Auto Technician Lead** January 2022

- Installed and troubleshooted aftermarket electronics in vehicles including remote starters, cameras and radios
- Utilized company resources to identify compatible parts for specific vehicles, locate datasheets detailing the vehicles' circuitry and read through complex wiring diagrams to identify necessary connections
- Managed scheduling, opening and closing, making pre-calls to customers to confirm appointments and address concerns
- Trained junior installers on correct install critical thinking and troubleshooting practices such as using multimeter for testing components and electrical circuits, soldering, reading wiring diagrams, disassembling and reassembling car parts

SKILLS

- **Software:** Unity HPC, LLM APIs, Git, GitHub, OOP, Shell, Unix, Linux, SCRUM master, Mulesoft Anypoint platform & studio, REST, Postman, Firebase, JSON, Debugging, Unit testing, NI Multisim
- **Programming Languages:** Rust, Python, C++, C, Bash scripting, Java, HTML, Java scripting, prolog, DataWeave
- **Lab Equipment:** Arduino UNO, Oscilloscopes, MOSFET, Op-Amp, AC/DC Power supplies, Multimeters, Wiring diagrams