Rugved M. Zarkar

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Education

University of Maryland, College Park, Bachelor's of Science, Computer Science — Expected: May 2028

Experience

Research Assistant — August 2024 - Present
University of Maryland Department of Computer Science — *College Park, MD*

- Developing interactive touchscreen to Calico, a miniature relocatable wearable system with fast and precise locomotion for on-body interaction, actuation, and sensing
- Working to implement AI to allow robots to sense the actions of human hosts and display related statistics

Software Engineering Intern — May 2023 - May 2024
Aspire Johns Hopkins Applied Physics Laboratory — *Columbia, MD*

- Utilized Matlab, Python, and Github to develop a production-level application to track inventory
- Led 10 intern developers: set meetings and deadlines for fellow interns throughout app development, presented findings to APL Air Missile Defense Sector administration, and surveyed employees for user preferences on SAILS app

Junior Developer — May 2022 - September 2022
Neuron-G — *Columbia, MD*

- Conducted study to determine the extent of bias in Supreme Court cases using SKLearn's Random Forest to capture feature importance between demographic variables such as race, gender, and age

Research and Development Intern — May 2020 - August 2022
BlueWave Semiconductors — *Baltimore, MD*

- Led the implementation of automated remote monitoring for the CVD System, Substrate heaters, and Thermal Evaporator Deposition Systems using PLC circuitry programming and sensors, which was especially useful during the pandemic for remote depositions

Projects

Patent Search for Efficient Patent Similarity Findings

- Developed a Retrieval-Augmented Generation (RAG) pipeline leveraging Llama Stack to parse, vectorize, and query patent XML files, providing high-relevance document retrieval and dynamic, context-driven answers.
- Integrated open-source LLM models and a vector database (AWS) to handle large volumes of patent text, enabling semantically rich searching and automated patent analysis.

Neuromaker International Bioengineering Competition

- Built a prosthetic hand to convert speech to American Sign Language using Google APIs, Python, RaspberryOS

QuHacks Python Hackathon

- Developed HTML and JS web app that reminded users to drink water through SMS notifications

McMaster National CAD Designation League

- Tasked with identifying a problem with current transportation services; Designed new effective train service

Monarch Butterfly Project

- Built 3 Monarch Butterfly gardens in local schools with experts from the Monarch Sister Schools to implement into the 5th-grade curriculum; developed an app to track health/migration

MESA Fundraiser

- Interviewed 4 underrepresented schools to pinpoint needed STEM-related goods; raised $5000+ through fundraisers with Blue Cross Blue Shield, Johns Hopkins, Tantus Technologies, and Rotary clubs

Leukemia and Lymphoma Society

- Served as River Hill High School representative for a group of over 30 students raising money ($3k+ per student) for research at the Leukemia and Lymphoma Society

TANA AI Project

- Developed 12 AI Interactive Chat Bots to educate 10,000+ conference attendees about prominent Indian historical figures using Google APIs and Python

Skills

Certifications: Autodesk Fusion Certified User, AWS Cloud Practitioner, AWS Solutions Architect
Languages: Python, Java, JS, HTML, MATLAB
Frameworks and Tools: Pinecone, FAISS, Ollama, Llama-stack, REST APIs, Git, Docker