Pareekshith Krishna

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Education

Carnegie Mellon University Pittsburgh, PA
Bachelor of Science in Electrical and Computer Engineering, Dean's List - Fall 2024 *May 2026*
Relevant Coursework: 18213 - Introduction to Computer Systems, 15122 - Principles of Imperative Computation, 18330 - Introduction to Computer Security, 18240 - Structure and Design of Digital Systems, 18220 - Electronic Devices and Analog Circuits, 15294 - Rapid Prototyping Technologies

Technical Skills

Languages: Java, Python, C/C++, Assembly, JavaScript, HTML/CSS, MATLAB, SQL
Developer Tools/Frameworks: Apache Flink, Eclipse, Flask, IntelliJ, Linux, Git, PyCharm, Spring Boot, Vim, VS Code
Libraries: pandas, NumPy, Matplotlib, OpenCV, Pytorch, sci-kit learn, seaborn, soundfile, Tensorflow
Databases: MongoDB, MySQL

Experience

CyLab Research Assistant - Prof. Vyas Sekar Dec. 2024 –
Carnegie Mellon University *Pittsburgh, PA*

- Implemented CountMinSketch, CountSketch, and Univmon approximate streaming algorithms utilizing Apache Flink to process streaming data for real-time analysis to cut down big data analytics costs by over 10x.
- Developed efficient serialization methods using ByteBuffer and hash function optimization, reducing memory overhead while maintaining accuracy within 5% error bounds.

Research Assistant Aug. 2024 – Dec. 2024
Xu Lab, Carnegie Mellon University *Pittsburgh, PA*

- Facilitated a collaborative research effort with Harvard Medical School, transforming the Topofit brain MRI surface registration model into an unsupervised system, enabling more autonomous operation while increasing input image resolution from 36x36x36 to 128x128x128, improving model precision and mesh deformation predictions.
- Evaluated and optimized clustering and classification techniques, comparing K-means, Gaussian Mixture Models, and cutting-edge deep learning approaches to accurately classify organelles in cryo-ET image datasets.

Frontend Software Engineer Intern Feb. 2021 – April 2021
Spotidol, Inc. *San Francisco, CA*

- Employed HTML/CSS and Javascript and ventured into backend programming through MongoDB and Angular to produce a music competition webpage for Spotidol's user base of over 6000 people.
- Worked with a scrum team of 5 engineers to integrate audio streaming features, allowing users to upload and manage digital content, leveraging REST APIs for real-time data synchronization.

Projects

Josh-E | *Arduino, Python, OpenCV* Sep. 2024 – Jan. 2025

- Developed an autonomous robot for CMU's Build18 competition to detect and collect plastic bottles using a Roboflow object detection model integrated with in-built Raspberry Pi 5 vision systems.
- Achieved a 95% success rate in detecting and picking up bottles by calibrating the robot's object detection and grip mechanisms through iterative testing.

Historical Map Explorer | *HTML/CSS, Javascript, Python, Flask* Nov. 2024 – Jan. 2025

- Developed an interactive historical map exploration tool using Leaflet.js, integrating the Wikipedia API to dynamically fetch and display geolocated historical articles within user-specified time periods.
- Implemented client-side data processing and visualization features including time period filtering, BCE/CE date handling, and interactive markers with popup summaries, serving historical context for any clicked location.

Proxy Lab | *C* Nov. 2024 – Dec. 2024

- Built a high-performance HTTP proxy with HTTP/1.0 GET support and concurrent request handling via POSIX Threads.
- Developed an in-memory caching system with an LRU eviction policy, capable of storing up to 1 MiB of web objects, reducing response times for frequently requested resources.

Dynamic Memory Allocator | *C* Oct. 2024 – Nov. 2024

- Designed a fully-functioning segregated free list dynamic memory allocator implementing doubly-linked explicit lists with a Last-In First-Out approach for efficient free block management.
- Placed in top 10 on the Malloc Lab leaderboard out of over 150 Introduction to Computer Systems undergraduate students.