

Saad Rafiq

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EDUCATION

Bachelor of Science in Computer Science
Bachelor of Science in Applied Mathematics
Texas State University – San Marcos, TX
GPA 3.7

Anticipated Graduation: December 2024

RELEVANT COURSEWORK

Data Structures & Algorithms
Object-Oriented Design & Programming
Software Engineering

Computer Architecture
Parallel Programming
Numerical Analysis I & II

TECHNICAL SKILLS

Programming Languages – C++, Java, Python, MIPS, MATLAB, Bash

Framework & Technologies – Linux, Git/GitHub, ROS, Flask, HTML, CSS, AWS, PostgreSQL

EXPERIENCE

Software Engineering Intern

High-Performance Engineering (HiPE) Lab
San Marcos, Texas

June 2022 – May 2023

- Utilized 3 Nvidia Jetson computing boards to sense, acquire, and transmit environmental analytics for a firefighting robot
 - Implemented machine learning models in Python using the subprocess library to distinguish human screams and audio anomalies
 - Integrated pub/sub object-oriented design pattern and action/client server on jetsons with ROS2 to transmit real-time data and manipulate robot actions
 - Designed a custom Ubuntu image that enabled Cuda for machine learning optimization
- Collaborated with interdisciplinary students throughout duration of project
 - Conducted weekly analysis of stakeholder code add-ons for future implementation
 - Driven troubleshooting of team's hardware integration into Jetson's software development
 - Performed daily peer review of team member's code to ensure codebase viability

Research Assistant

IOR Mathematics Research Team
San Marcos, Texas

August 2021 – May 2023

- Investigated motion capture applications by statistically analyzing matrices using Unsupervised Learning techniques
 - Applied Robust Principal Component Analysis (RPCA) and K-means Clustering to develop an algorithm that recognizes point-centric body movement
 - Used RPCA to compute the decomposition of a frame in a video time series from a user-defined dataset into a low rank matrix and a sparse component
 - Implemented the algorithm via MATLAB to refine the clustering parameters and provide a viable code that outputs to MP4 file extensions

ACHIEVEMENTS, AWARDS, COMMUNITY SERVICE

Scholar, NSF H-LSAMP Scholars Program, Texas State University

August 2021 – Present

Member, Society of Hispanic Professional Engineers (SHPE), Texas State University

August 2022 – Present

1st Place Recipient, Machine Learning & Firefighting REU, Texas State University

July 2022

Poster Presenter, TXST Data Analytics Showcase, Texas State University

April 2023