Shiva Kalyan Sunder Diwakaruni

Portfolio | sdiwaka@g.clemson.edu | (+1) 8647657701 | linkedin.com/kshiva98 | GitHub

Education

Clemson University, SC — **Aug 2023 - Dec 2025**
Master of Science, Computer Science (Specialization: **Networks, Systems, and Security**) — **GPA: 4.0/4.0**

JNTUH College of Engineering, Hyderabad, India — **Aug 2016 - Sep 2020**
Bachelor of Technology, Computer Science (Technical Assistant) — **GPA: 9.11/10**
Winner of NASA Space Apps Hackathon, **Founder** of Bits and Bytes: Mentored over **200 students** in DS Algo for interview prep.

Technical Skills

Languages: Python, MATLAB, C++, C, JavaScript, SQL, Bash, Java
Tools/Frameworks: React, AWS, Git, Perforce, Docker, Linux, Operating Systems, Flask, RASA, Android Studio, mitmproxy, Jira, Azure LUIS
Technologies: Cloud Computing, Object Oriented Programming, Cybersecurity, CI/CD, Machine Learning

Experience

Clemson University, VIPR-GS Lab, USA - Graduate Research Assistant — **Jan 2024 - Present**

- Spearheaded development and comparative analysis of advanced pathfinding algorithms, focusing on Multiattribute A* methodology.
- Conducted comprehensive sensitivity data analysis on over **10 environmental factors**, including risk, soil untrafficability, and elevation, to enhance algorithmic performance under diverse conditions.
- Pioneered implementation of terrain analysis by perturbing elevation data using ArcGIS APIs and custom **Python** scripts to evaluate path variability, improving computational performance and **efficiency by nearly 100%**.
- Performed extensive error analysis, using RMSE as a metric, to understand impact of perturbations on **1000+ paths** for similarity, thereby refining algorithm's robustness against variances.
- Innovated existing algorithm to produce paths with **60% reduced length** and lower average risk, ensuring safer and more consistent routing outcomes.

MathWorks, Hyderabad, India - Senior Associate Software Engineer — **Nov 2020 - Jul 2023**

- Achieved **50% faster real-time data processing (1M+ data)** with scalable fanout queue service and data reduction techniques **(Dojo/C++)**.
- Implemented data thinning techniques, resulting in a ∼**30-second** reduction in **latency** for large data transfer between frontend and backend.
- Designed a scalable user-defined zooming feature for efficient data exploration in XY visualizations, supporting over **50 concurrent instances** per session.
- Enhanced performance by employing a stateful design and integrating publisher-subscriber services, leading to a **60% reduction in frontend redraws** and a **20% decrease in backend data load**.
- **Reduced user errors by 40%** in Simulink Data Inspector by implementing interactive map components utilizing a client-side rendering framework.
- Resolved **80+ bugs** through customer and team collaboration, ensuring feature robustness with UI and unit testing.

MathWorks, Hyderabad, India - Software Engineering Intern — **Jan 2020 - Jun 2020**

- Architected APIs with an **optimized latency of 10ms** to render traffic lights from **OSM, HERE HD and OpenDrive**.
- Represented traffic network as a Graph. Scaled design to automatic driving scenario generation and simulation.
- Created a MATLAB simulation replicating traffic light functionality, **improving junction detection accuracy by 40%**.
- Facilitated and presented knowledge sharing meetings focused on advanced technologies (DL, ADAS).

Sayint.ai, Hyderabad, India - Software Engineering Intern — **Nov 2018 - Mar 2019**

- Engineered high-performance APIs for handling large incoming flow of speech to text conversion requests, **slashing cloud compute costs by $75K**.
- Drove an **85% accurate** text classifier for call centers, boosting performance monitoring and customer satisfaction.
- Transformed speech-to-text conversion tool into a scalable cloud-based SaaS solution, enabling a **30%** increase in handling larger workloads.

Academic Projects

Serverless Deepfake Text Detection Platform

- Built a serverless web application utilizing AWS Lambda and API Gateway, providing users with real-time feedback on likelihood of uploaded text content being a deepfake.

Network Traffic Analysis of Third-Party Android Applications — **GitHub**

- Executed an automated Android app analysis project to unveil data collection practices, leading to a 60% time efficiency gain.

Navigation Bot

- Developed an A*-powered Teams bot as a part of MathWorks Hack Day for efficient office navigation.

Earthquake Alert System — **GitHub**

- Collaborated with team of 4 to develop an Android app to alert, notify, and provide a safety checklist for users of an impending earthquake, employing Android Studio, PHP, HTML, CSS, Javascript, and Google Maps API.

Achievements & Publications

- Completed **AWS Certified Developer Associate** certification.
- Published research on Speech Emotion Recognition (SER) using Mel spectrograms, attaining a **75% accuracy**.