

SAI THARUN REDDY MULKA

Dallas, Texas, 75252

☎ 469-951-6605

✉ sxm220351@utdallas.edu

🌐 www.linkedin.com/in/saitharunreddy

Education

The University of Texas at Dallas

Doctor of Philosophy in Computer Science

August 2023 - Present

GPA 3.8/4

Vellore Institute of Technology, Amaravati

Bachelors in Computer Science Specialization in Networking and Security

June 2019 - June 2023

GPA 9.03/10

Projects

VOLTRON: Defense against Malicious USB Peripherals | *Python, Hardware Security, Machine Learning*

Fall 2024

- Developed **VOLTRON**, a lightweight and reliable framework that **requires no hardware modifications** yet effectively distinguishes benign from malicious USB devices to secure against impersonation attacks.
- Implemented advanced signal analysis and classification techniques to capture **device-specific electrical fingerprints**.
- Evaluated across **70 real-world USB devices**, demonstrating **high accuracy in device identification and unauthorized device blocking**.
- Outperformed conventional USB defenses by offering **zero-trust enforcement** at the hardware interface level with minimal system overhead.

A Comprehensive Examination of Email Spoofing | *Email Security, Mail Server Configuration*

Summer 2022

- Investigated flaws in email authentication protocols (SPF, DKIM, DMARC) by replicating real-world phishing scenarios.
- Developed controlled exploits based on inconsistencies in domain validation and message integrity checks.
- Configured an isolated mail server to simulate spoofing attempts in a safe, reproducible environment.
- Studied vulnerabilities in popular domains (e.g., Medium.com, Analyticsvidhya.com) stemming from NULL MX records and nonexistent domains.
- Demonstrated that top providers like Google, AOL, and ProtonMail were vulnerable in specific misconfiguration test cases.

User and Entity Behavioral Analysis (UEBA) | *Insider Threat Detection, Deep Learning*

Spring 2020 – Fall 2020

- Designed a deep learning-based framework to detect insider threats by analyzing behavioral biometrics such as mouse clicks and keystroke dynamics.
- Collected and preprocessed user activity data to simulate legitimate vs. impersonated user behavior scenarios.
- Implemented and fine-tuned a modified Autoencoder neural network for anomaly detection, outperforming traditional UEBA models.
- Evaluated model performance across multiple simulated compromise conditions, demonstrating effective detection of subtle behavioral deviations.
- Collaborated in a team of two to conduct research, build models, and enhance the detection accuracy of existing solutions.

Experience

Teaching Assistant, University of Texas at Dallas

Fall 2023 – Present

- Courses:** Computer Networks (Fall 2023) • Wireless Networks (Spring 2024) • Database Systems (Fall 2024) • Computer Networks (Spring 2025) • Database Systems (Summer 2025)

Research Assistant, S3 Lab, University of Texas at Dallas

Spring 2024 – Present

- Developed **VOLTRON**, a machine learning-based framework for detecting malicious USB peripherals by analyzing electrical signal fingerprints; achieved high accuracy across 70 real-world devices without hardware modifications.
- Autonomous Vehicle Security:** Designing an LLM-guided fuzzing framework for ROS-based autonomous systems. Leveraging deep learning models to generate synthetic sensor data and control inputs for coverage-guided testing of AV components under adversarial scenarios.
- Skills Gained:** Firmware reverse engineering, symbolic execution, fuzzing, ROS architecture, LLM-integrated fuzzing, synthetic data generation, autonomous systems testing.

Publications

A Comprehensive Examination of Email Spoofing: Issues and Prospects for Email Security

November 2023

- Published in *Computers & Security Journal*, a leading venue in cybersecurity research.

Artificial Intelligence in Higher Education

September 2022

- Co-authored with **Kishan Kondaveeti**, Mulka Sai Tharun Reddy, and Tanaya Krishna Jupalli.
- Published by *IGI Global* as part of their academic collection on emerging technologies in education.

Artificial Neural Network Autoencoder for Insider Cyber Security Threat Detection

November 2023

- Published in *Future Internet*, exploring unsupervised learning techniques for anomaly detection in cybersecurity.