HUGH COLEMAN

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EDUCATION

TEXAS A&M UNIVERSITY — College Station, TX

Ph.D. in Computer Science starting in Fall 2025

TRINITY UNIVERSITY — San Antonio, TX

B.S. in Computer Science — May 2025

Grade: 3.808, Honors Thesis, Dean's List

AWARDS AND HONORS

Horizon Fellowship, Texas A&M College of Engineering	2025-present
Outstanding Senior Research Award, Trinity University	2025
Dean's Scholarship, Trinity University	2021-present
NSF Student Travel Grant Recipient, IEEE MASS 2024	2024
NTGPA Scholar, GPA Midstream North Texas Scholarship	2022-present

RESEARCH EXPERIENCE

AIR FORCE RESEARCH LABORATORY — Rome, NY

Advanced Course in Engineering — May 2024 - August 2024

- Worked on a government project integrating Mythic agents into in-house Command and Control (C2) software Rebellion for enhanced UX, deconfliction, and operational diversification.
- Automated C2 payload generation, agent tasking and listener generation.
- Created software to create and post through bot accounts on Mastodon server to serve misinformation for simulated operations.
- Used local LLMs to identify and deploy mass misinformation in simulated operations.
- Developed kinetic drone software for C2, navigation, swarm and ordinance deployment for simulated operations.
- Conducted malware analysis through reverse engineering, static and dynamic analysis on packed malicious software to assess threat behavior and mechanisms.
- Crafted cryptography scheme optimized for over-the-air rekeying.
- Created FPGA hardware PUF for validating devices.

TRINITY UNIVERSITY — San Antonio, TX

Honors Thesis, Department of Computer Science — August 2023 - present

- Conducting thesis research under the supervision of Prof. Sheng Tan, focusing on the intersection of federated learning and vehicular ad hoc networks (VANETs).
- Developed a Dynamic Vehicle Selection and Adaptive Aggregation Asynchronous based Asynchronous Federated Learning scheme to optimize federated learning performance in vehicular networks.
- Presented first-author research poster on federated learning at IEEE MASS 2024 in Seoul, South Korea.

PROFESSIONAL EXPERIENCE

TEACHING ASSISTANT — San Antonio, TX
Principles of Theoretical Computer Science, Trinity University — Fall 2023, Fall 2024

- Held office hours, midterm and final exam review sessions.
- Graded quizzes and homeworks.

USAA — San Antonio, TX
Software Engineer Intern, Bank — May 2023 - August 2023

- Developed serverless banking applications using AWS and Terraform.
- Implemented AWS Step Functions state machine to orchestrate account eligibility verification processes on USAA deposit account decisioning.
- Engineered authentication microservice using Terraform to provision AWS infrastructure and develop API for retrieving member identification tokens.
- Implemented Datadog dashboard to measure reliability and cost of AWS banking services.

RICE UNIVERSITY — Houston, TX
OwlSpark Startup Accelerator, Class 9 — May 2021 - August 2021

- Created a Python application to analyze 6,448 miles of Texas Railroad Commission natural gas pipeline data to identify 353 potential clients for computational fluid dynamics software.
- Presented to Chevron Technology Ventures after pitching at Bayou Startup Showcase.
- Identified key pain points by conducting 29 customer interviews with industry professionals across the industry.

GATHERX ANALYTICS — Houston, TX
Co-Founder and Developer — May 2020 - August 2021

- Created web-based product key authentication system for subscription sales and management.
- Led, developed, and managed free trial product verification for a six-month pilot test with operational datasets from potential clients.
- Built test code solution to improve system reliability for critical computational fluid dynamics engine calculations for data analytics platform and deployed to codebase.
- Presented at Rice University Bayou Startup Showcase pitch event.

PUBLICATIONS

1. **Hugh Coleman,** Sheng Tan, and Zi Wang, “Poster: Dynamic Vehicle Selection and Adaptive Aggregation for Asynchronous Federated Learning Enabled VANET,” in *2024 IEEE 21st International Conference on Mobile Ad-Hoc and Smart Systems (MASS), IEEE,* Sep. 2024, pp. 480–481.