

Tania-Amanda Fredrick

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EDUCATION

Master's in Software and Security Engineering

Texas Tech University • Lubbock, TX, USA • 2025

- Relevant Coursework: Statistics, Applied Data Science, Neural Networks, Digital Forensics
- Awards: Graduate School Competitive Tuition Scholarship, Research Assistant | Chemistry Department.

Bachelor's Degree in Information Technology

Eastern Mediterranean University • Cyprus • 2022

- Awards: Bachelors Degree Scholarship

Advanced Diploma in Software Engineering

Aptech Computer Education • Nigeria • 2019

SKILLS

- **Programming & Algorithms:** Python, C++, TypeScript, JavaScript
- **Data Science & Machine Learning:** Neural Networks, AI, Data Analysis, Numerical Methods
- **Tools & Frameworks:** TensorFlow, PyTorch, scikit-learn, ReactJS, Next.js, Redux, Shadcn, Tailwind
- **Data Visualization:** Matplotlib, Seaborn, Power BI
- **Soft Skills:** Research Collaboration, Analytical Thinking, Effective Communication

EXPERIENCE

Research Assistant

Chemistry Department | Texas Tech University

July 2024 - August 2024, Lubbock, TX

- Conducted research under Professor Park Barrat on "Physically Informed AI-Based Approaches for Automated Assignment of Rotational Spectra," applying machine learning classification techniques to predict the rotational spectra of various molecular categories.
- Utilized advanced machine learning models to enhance the accuracy of rotational spectra predictions, contributing to more efficient and precise automated spectral analysis.
- Focused on the intersection of machine learning and computational chemistry, enhancing the automated analysis of complex systems.

Front End Engineer

Demir

July 2024 - Present, Remote

- Spearheading the development of the seller dashboard for Demir, resulting in a 30% increase in dashboard efficiency and a 20% reduction in seller support inquiries by enhancing the management of sales, shipping, and order status.
- Implementing user-friendly features that improved seller satisfaction scores by 25% and contributed to a 15% increase in overall platform engagement through seamless integration with the e-commerce application.

Front End Developer Intern

HNG

June 2024 - August 2024, Remote

- Developed and maintained the front-end of Telex using Tailwind, Shadcn, Next.js, and TypeScript, ensuring a responsive and user-friendly interface for seamless notification management and app integration.
- Led the implementation of profile settings, allowing users to update their profile details and delete accounts, resulting in a 25% increase in user engagement and a 15% reduction in support requests related to account management.
- Integrated Slack into the Telex platform, enabling users to add Slack channels and view notifications, improving cross-platform collaboration and communication.

Student Assistant - Tutor

Marsha Sharp Center for Student-Athletes | Texas Tech University

January 2024 - June 2024, Lubbock, TX

- Provided academic support to students by explaining complex concepts, assisting with assignments, and guiding them through problem-solving processes in various subjects.
- Conducted over 50 one-on-one tutoring sessions, reinforcing key course materials and promoting effective learning strategies, resulting in a 30% increase in student retention of material.

Front End Engineer

Coeral

October 2022 - March 2023, Remote

- Developed a user-friendly solution with intuitive interfaces for off-ramping stable cryptocurrencies to fiat on EVM-compatible chains, using Wagmi and ConnectKit to enhance user wallet experiences for easily joining decentralized applications.
- Improved automation test coverage from 0% to 30% by writing 30 end-to-end and unit tests using Jasmine and Protractor, ensuring a robust and bug-free application, while also enhancing front-end load time by 33%, reducing page size by 50% and storage space by 30%, significantly boosting user engagement and satisfaction.

PROJECTS

Master's Thesis - Malware Analysis using Real-time Reinforcement Learning

Computer Science | Texas Tech University • August 2024 - Present

- Architecting and implementing a deep reinforcement learning system using PyTorch for real-time network traffic analysis and malware detection.
- Developing a DQN (Deep Q-Network) agent with multi-layer architecture featuring epsilon-greedy exploration and experience replay, optimizing detection accuracy while minimizing false positives.
- Engineering a real-time feature extraction pipeline that processes Zeek network logs, incorporating traffic patterns, protocol anomalies, and connection statistics through standardized vectorization.

ADVANCED BRAIN SEGMENTATION USING EMCAD

TEXAS TECH UNIVERSITY • August 2024 - December 2024

- Created a model using EMCAD for advanced brain tumor segmentation, achieving a significant improvement in segmentation accuracy for identifying and classifying tumor boundaries.
- Preprocessed large datasets from medical imaging sources, ensuring that input data met high-quality standards for training and evaluation.
- Developed and fine-tuned the model using convolutional neural networks (CNNs), enabling precise and early detection of brain tumors.
- Collaborated with healthcare professionals to validate the model against real-world clinical scenarios, demonstrating its potential applicability in diagnostic workflows.

Applied Data Science Research Project

Texas Tech University | 2024

- Led a 3-person research team analyzing LinkedIn profile characteristics and career success metrics, utilizing machine learning techniques on 62,000+ professional profiles.
- Developed multiple machine learning models (Random Forest, Gradient Boosting, CatBoost) achieving 97%+ accuracy in predicting professional promotions, while identifying key factors driving career advancement.
- Engineered novel career progression metrics and conducted comprehensive feature analysis, presenting findings to faculty and peers.

Digital Forensics Project: Microsoft Defender Analysis

Computer Science | Texas Tech University • August 2023 - December 2023

- Conducted comprehensive defensive analysis of Microsoft Defender security architecture, documenting system behaviors and protection mechanisms.
- Evaluated antivirus response patterns and detection capabilities using advanced forensic techniques and industry-standard testing protocols.
- Developed detailed technical documentation of security features and system hardening recommendations based on empirical analysis,

INVOLVEMENT

Judge Advisor

Texas Tech University • FIRST Tech Challenge (Whitacre College of Engineering Outreach Program) • January 2025 - Present

- Serving as a Judge Advisor for FIRST Tech Challenge robotics tournaments, evaluating student teams' robotics projects across multiple criteria including technical design, programming, marketing, and community impact.
- Collaborating with diverse judging panels to assess student presentations on robot design, construction, and programming capabilities.
- Contributing to the advancement selection process for teams progressing to higher levels of competition."

Member

Texas Tech University • Texas Tech Students For Global Connections • October 2024 - October 2023

- Managed sales operations during the SGC's Culture Fest, a multicultural celebration at Texas Tech University.
- Handled cash transactions for beverage sales while engaging with a diverse international audience, contributing to the event's cultural exchange mission and financial success.

Mentor

Women Techsters (Tech4dev) • August 2023 - August 2023

- Served as a mentor in the Women Techsters Bootcamp program, focusing on reducing the digital gender gap.
- Led instruction in front-end development fundamentals including HTML, CSS, and JavaScript.
- Developed and delivered curriculum to empower women with technical skills and create equal opportunities in technology."

Instructor

Bebe&CeCe Let's Computerize Our Children • September 2021 – February 2021

- Facilitated computer literacy education for secondary school students, teaching essential typing skills using Massively Beacon Typing tool.
- Provided comprehensive instruction in Microsoft Office applications and guided students through website development using Adobe Dreamweaver, enhancing their digital literacy and technical capabilities.