

# Vinicius Bobato

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## EDUCATION

**Texas A&M University**

*Ph. D Computer Engineering*

**Texas A&M University**

*M.S. Engineering Technology*

*Thesis: Cyber Security Use Cases on a Smart Distribution System*

**Texas A&M University**

*B.S. Electronic Systems Engineering Technology with Cybersecurity Minor*

**College Station, Texas**

*GPA: 3.5*

**College Station, Texas**

*GPA: 3.5*

**College Station, Texas**

*GPA: 3.6*

## SKILLS

**Programming:**

Python, C/C++, Shell/Bash, NumPy, Pandas, Scikit-learn, TensorFlow, SQL (Beginner)

**Operating Systems:**

Linux (Ubuntu, Kali), Windows, macOS

**Networking & Security:**

Cybersecurity, TCP/IP, OSPF, VLANs, DHCP, DNS, Firewall configuration, Packet Analysis

**Tools:**

Git, Nmap, Metasploit, Jupyter, Anaconda, Scapy, Flask, REST

**Languages:**

Portuguese (Fluent), English (Fluent), and Spanish (Advanced)

## EXPERIENCE

**Department of Electrical and Computer Engineering – PRISE Project**

*Graduate Research, Aug. 2023 – Present*

- Modeled the network side of a Smart Distribution System and AMI RF mesh network using Linux containers.
- Developed Python scripts to enable communication between Linux containers using TCP/UDP sockets.
- Analyzed and visualized over 100,000 network packets using Python, identifying trends in malicious activity.

**Texas A&M Engineering Experiment Station – Cyber Physical Resilient Energy Systems Project**

*Undergraduate/Graduate Research Assistant, May 2022 – Dec. 2023*

- Used Linux in virtualized environments and scripting languages to implement connectivity between DNP3 and IEC61850 protocols improving system efficiency by 20%.
- Developed various programs in C/C++ and Python to integrate different technologies for research, improving system reliability and decreasing processing time.
- Performed data-analysis using NumPy and Pandas to find anomalies in network traffic data for three different attack vectors.
- Applied and studied offensive and defensive techniques to safeguard digital assets, including penetration testing and defense strategies.

**Department of Engineering Technology & Industrial Distribution**

*Graduate Teacher Assistant for Local-and-Metropolitan-Area Networks, Jan 2024 – Present*

- Led networking lab sessions for 60+ students, focusing on terminal commands and troubleshooting techniques, resulting in 95% of students achieving hands-on proficiency by the end of the term.
- Designed and implemented network topologies, assisting students with practical skills in networking protocol implementations.

## OUTSTANDING PROJECTS

- **Engineering Tech Capstone:** As a Project Manager, I led the development of a table sized Remote Terminal Unit (RTU) using different electronics and OpenDNP3 communication protocol for SCADA security research at Texas A&M University.
- **CAPTCHA Image Classification:** Developed a deep learning model using the pre-trained VGG16 Machine Learning architecture and TensorFlow to accurately classify CAPTCHA images into different categories, achieving 93% accuracy. Applied data augmentation techniques to increase robustness of the model and evaluated its performance using metrics like precision, recall, and F1 scores. Created a confusion matrix using heatmaps to better visualize the results.
- **ML-Based-Firewall:** Developed a machine learning-based firewall using a Random Forest Classifier and Scikit-learn to detect anomalous IoT network traffic from the CSE-CIC IoT-23 dataset. Achieved a ROC AUC score of 0.9997 on a balanced dataset. Built a Flask RESTful API for real-time prediction.

## PUBLICATIONS

- Cyber Security of a Smart Power Distribution System – Cyber Subsystem Use Case - 2025 Grid Edge Technologies Conference & Exposition
- Cyber Security Use Case on a Smart Power Distribution System – Physical Subsystem - 2025 Grid Edge Technologies Conference & Exposition
- Analyzing a Multi-Stage Cyber Threat and Its Impact on the Power System - IET Cyber-Physical Systems: Theory & Applications

## COURSEWORK

Artificial Intelligence • Embedded Systems Intelligent Design • Data Analysis and Tools for Industry • Advanced Network & Security Systems