Vinicius M. Bobato

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SUMMARY

Ph.D. candidate in Computer Engineering with research experience in machine learning and data-driven systems. Designed, trained, and evaluated deep learning and reinforcement learning models, and deployed prototypes as REST APIs in simulated environments using Flask and AWS. Experienced in data preprocessing, feature engineering, model evaluation, and deploying cloud-based applications on AWS.

EDUCATION

Texas A&M University, College Station, TX
PhD in Computer Engineering — *GPA: 3.8*
MS in Engineering Technology — *Grad Dec. 2024*
BS in Electornic Systems Engineering Technology — *Grad May 2023*

***Relevant Coursework**: Artificial Intelligence · Deep Learning · Deep Reinforcement Learning · Intelligent Agent · Data Analysis & Tools for Industry · Data Mining · Data Analytics for Cybersecurity*

EXPERIENCE

Avika Billing Solutions LLC, Houston, TX — Aug 2025 - Present
Software Engineer

- Architected and deployed a HIPAA-aligned SaaS medical billing platform serving 100+ active users using Flask, AWS Elastic Beanstalk, RDS, and SES.
- Designed and implemented secure ACH and credit card payment infrastructure (NACHA generation, webhook integration, real-time monitoring), reducing processing time by 70%.
- Built a full cloud infrastructure and DevOps pipeline, including SSL/TLS, domain management, CI/CD deployments, and database migrations.
- Configured AWS WAF and rate-limiting policies to prevent abuse and malicious traffic spikes, contributing to 99% platform uptime.

Department of Electrical and Computer Engineering – PRISE Project, College Station, TX — Aug. 2023 - Present
Graduate Researcher

- Designed and trained a PyTorch-based deep learning model for malicious TCP traffic detection, achieving 95% classification accuracy on labeled network data.
- Processed and analyzed 100K+ network packets using Pandas to identify anomalies and attack patterns.
- Deployed trained models as Flask REST APIs for real-time inference in simulated production environments.
- Conducted anomaly detection across cyber-physical attack scenarios, analyzing traffic using NumPy, Pandas, and Matplotlib.

SKILLS

- **Programming:** Python, C/C++, Bash, SQL, HTML, JavaScript
- **ML & Data**: PyTorch, TensorFlow, Keras, Scikit-learn, NumPy, Pandas, Matplotlib
- **Cloud & DevOps**: AWS (EC2, EB, RDS, SES, S3), Docker, Git
- **Web & APIs:** Flask, REST APIs
- **Systems**: Linux (Ubuntu, Kali), Windows
- **Languages**: Portuguese (Native), English (Fluent), Spanish (Advanced)

PROJECTS

Reinforcement Learning Firewall
https://github.com/vmbobato/RL-Firewall

- Designed a custom Gymnasium environment modeling firewall packet filtering as a sequential decision-making problem.
- Trained Q-Learning, SARSA, and DQN agents to learn adaptive Allow/Deny policies, outperforming static rule-based baselines.
- Engineered a security-aware reward function balancing false positives, false negatives, and operational cost.

ASIC (AI for Satellite Image Classification)
https://github.com/vmbobato/ASIC

- Fine-tuned semantic segmentation models on 800+ satellite images across 7 land cover classes, optimizing training with data augmentation and class balancing.
- Deployed the model as a Flask-based web application enabling user-driven satellite image analysis.
- Achieved over 70% pixel-level segmentation accuracy on real-world satellite imagery, demonstrating generalization beyond curated training datasets.