Vinicius M. Bobato

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SUMMARY

Engineer with experience building and deploying data-driven systems in production environments. Developed, trained, and optimized deep learning and reinforcement learning models, and deployed scalable REST APIs on AWS to support real-time inference. Strong expertise in Python, data preprocessing, model evaluation, and translating complex business problems into reliable ML solutions.

EDUCATION

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