

Tyler Smith, PhD

www.tylerjssmith.com | GitHub: [tylerjssmith](https://github.com/tylerjssmith)

Summary

- A STEM PhD with Security+ certification and over 7 years of professional experience building and operationalizing machine learning models and data pipelines.
- Proven ability to detect anomalies in security data, such as insider risk indicators, using Python and SQL, develop security automation tools, and build secure cloud infrastructure using Terraform and Ansible.

Projects

Built Machine Learning Models for Network Intrusion Detection

Developed Python project to build random forest and XGBoost models for 13-class network intrusion detection using the CIC-IDS-2017 benchmark dataset. Applied weights for class imbalance. Automated unit tests and Trivy scans via GitHub Actions. Final model achieved test recall >0.97 on 12/13 attack types [[GitHub](#)].

Developed AI/LLM-powered Security Automation Tool for Cloud Vulnerability Management

Built security automation tool with AWS Lambda and Bedrock to process Amazon Inspector vulnerability findings and deliver LLM-generated remediation recommendations. Mitigated prompt injection risk with field normalization, regex validation, and system prompt isolation. Wrote unit tests. Provisioned infrastructure with Terraform [[GitHub](#)].

Deployed and Secured Cloud-based Web Application (www.rainydaypolitics.com)

Deployed AWS web server (EC2) and database (RDS/Postgres) using Terraform and Ansible. Implemented defense-in-depth security posture, including IAM least-privilege, security groups, Linux hardening (UFW, OpenSSH, Fail2Ban, ClamAV), and continuous vulnerability scanning (Amazon Inspector) [[GitHub](#)].

Professional Experience

Postdoctoral Research Fellow

Icahn School of Medicine at Mount Sinai | 2023-Present

- Built supervised and unsupervised learning models, including feature engineering and model evaluation with precision-recall and receiver operating characteristic curves; wrote unit tests.
- Created modular Python and SQL workflows with version-controlled development in Git/GitHub, applying validation checks to ensure reproducibility and compliant handling of regulated healthcare datasets.
- Developed detailed documentation for peer-reviewed articles (career total: 9) and presented research at national and international conferences (12), communicating to technical and nontechnical audiences.

Doctoral Researcher

Johns Hopkins University | 2019-2023

- Applied unsupervised learning for preprocessing and anomaly detection (PCA, k-means) in high-dimensional data with techniques directly applicable to identifying anomalous user behavior.
- Designed and maintained scalable data pipelines for human subjects research data subject to federal privacy regulations (Common Rule) using R, SQL, and Git/GitHub.
- Formulated static and interactive data visualizations using ggplot2, Plotly, and Seaborn to drive exploratory data analysis and report results.

Staff Scientist

Earthjustice | 2016-2019

- Collaborated with key stakeholders to resolve scientific and technical issues underlying high-impact litigation and administrative advocacy.
- Communicated technical concepts to technical audiences (scientific conferences) and non-technical audiences (attorneys, policymakers, media).

Manager and Consultant

Consumer Reports | 2015-2016

- Analyzed datasets on food safety (e.g., antibiotic use in food animals, arsenic in food) using SAS and Stata for publication in *Consumer Reports*.
- Collaborated with editors and reporters to ensure accuracy of technical content published in *Consumer Reports*, upholding the stringent editorial standards of a prominent brand in a litigious environment.
- Represented organization to foreign governments at meetings of the World Health Organization's Codex Alimentarius Commission on international trade standards.

Program Officer

Johns Hopkins Center for a Livable Future | 2011-2015

- Developed process-based environmental exposure and risk models, including cancer risks assessments for food additives, and documented methodologies for non-technical clients.
- Led policy outreach, including Capitol Hill briefings, Congressional and agency meetings, op-eds, and advising advocacy coalitions on scientific and technical topics.

Technical Skills

Detection and Machine Learning

Python (pandas, scikit-learn, FastAPI), SQL; Git, GitHub; anomaly detection; supervised learning (random forests, XGBoost, generalized linear models); unsupervised learning (k-means, PCA); SMOTE; SHAP; statistical analysis; model evaluation (precision-recall and receiver operating characteristic [ROC] curves).

Cybersecurity and Cloud Security

AWS (IAM least-privilege, security groups); host hardening (UFW, OpenSSH, Fail2Ban, ClamAV); vulnerability scanning (Amazon Inspector); observability (CloudWatch, CloudTrail); MITRE ATT&CK; network flow analysis.

Cloud Architecture

AWS (EC2, RDS, S3, EventBridge, Lambda, Bedrock, SNS, Route 53); infrastructure-as-code (Terraform); configuration management (Ansible); Docker; Linux administration; Bash.

Education

PhD, Johns Hopkins University

Exposure Science and Environmental Epidemiology | 2023

MPH, Johns Hopkins University

Epidemiology and Biostatistics | 2015

BA, Johns Hopkins University

History | 2011

Certifications

- CompTIA Security+ (October 2025)

Eligibility

- DoD IAT Level II-compliant (Security+)
- Security clearance-eligible (U.S. citizen)