

RYAN G. SWOPE

(603) 957-8794 | rgswope@gmail.com | <https://rswope.io> | [LinkedIn](#)
Philadelphia, Pennsylvania

SKILLS

- **AI/ML:** PyTorch, Tinygrad, GenAI, LLMs, RAG, Adversarial AI, Reinforcement Learning
- **Programming:** Python (Expert), C, C++, Java, JavaScript (Familiar)
- **Infrastructure:** HPC Management, Slurm, Kubernetes, Linux/UNIX, Windows, MacOS, AWS, GCP, Azure
- **Tools:** MS Office Suite, Tableau, Palantir Foundry, LangChain, LlamaIndex, PyTorch Lightning, Optuna, Docker

WORK & LEADERSHIP EXPERIENCE

Booz Allen Hamilton

Senior Lead AI/ML Engineer

Philadelphia, PA

July 2021 – Present

- Lead AI on an edge agentic-AI program to reduce operator cognitive load in contested environments — on-device small-language-model (SLM) agents autonomously control drones to fly to objectives, identify mission-relevant objects en route, surface alerts to operators, and dynamically reprioritize the mission as new observations arrive. SLMs are run on hardened edge enabled GPUs and interacted with operators via ATAK.
- Architecting a high-fidelity modeling and simulation environment to run reinforcement learning on the agent stack enabling continuous improvement of reasoning and tool selection without field-test overhead, and allowing operators to war-game with the agent(s) prior to live environments.
- Served as the AI/ML lead on an \$10M Other Transactional Authority (OTA) capture from the Defense Innovation Unit (DIU) to perform bio-surveillance for the Defense Health Agency (DHA).
- Developed a technique to reverse-engineer blackbox AI models using adversarial AI.
- Co-authored a paper dissecting DeepSeek's R1 model and providing firm-wide guidance on foreign LLMs. Researched and implemented novel AI/ML techniques primarily focused on LLMs and reinforcement learning, including two GitHub-based LLM agents to streamline the software development lifecycle, and a state-of-the-art transformer-based multimodal deepfake detection model demoed to the DIU. Created a specialized RAG pipeline for writing proposals to contracts that was presented to Booz Allen's C-Suite.
- Performed research in differential privacy, and managed an HPC compute environment that's used for Booz Allen's most compute-heavy, on-prem workloads.
- Recognized as the "AI Rising Star" at the company for 2025

Streamliners Management Consulting

Business Analyst

Wilmington, DE

November 2020 – June 2021

- Created mathematical optimization models using techniques such as convex optimization and queueing theory.
- Model originally created for one warehouse was expanded to incorporate in all their warehouses in the Northeast.

RESEARCH

Swope, R.*, Khanna, A.*, Doldo, P.*, Roy, S.*, Raff, E. (2024) "[Feature Selection from Private Correlations](#)", Presented at AISec.

Swope, R. & Prsa, A. "[Pilot study for the autonomous discovery of unknown unknowns in photometric timeseries data](#)", Presented at AAS 237.

EDUCATION

University of Pennsylvania

Masters of Engineering in Scientific Computing (Applied A.I.)

Philadelphia, PA

In progress

Villanova University

Bachelor of Science in Astrophysics and Mathematics

Villanova, PA

May 2021

- **GPA:** 3.79 / 4.0
- **Minors:** Business, Physics
- **Awards:** Dean's List (all semesters), Sigma Pi Sigma, Pi Mu Epsilon, Phi Beta Kappa