Amanyi Daniel – Research Interest Statement

My interest lies at the intersection of cloud engineering, AI infrastructure, and secure distributed systems. As a DevOps engineer with years of experience building scalable, cost-efficient cloud platforms, I am increasingly drawn to the research challenges involved in deploying trustworthy and robust AI at scale.

Professionally, I have led the migration of legacy applications into event-driven, AI-enabled cloud architectures. At Capshall Technologies, I designed a serverless receipt management system and built secure APIs to support real-time AI inference, cutting costs by over 70%. I also developed automation pipelines that validated and curated data for machine learning workflows — experiences that exposed me to the challenges of distributed model deployment, data integrity, and performance at scale.

These challenges motivated me to deepen my understanding of:

- How cloud-native infrastructures can support scalable, privacy-aware AI systems;
- The role of federated learning and distributed training frameworks in solving data isolation and latency issues;
- How to ensure AI model robustness and trustworthiness under adversarial and unreliable cloud conditions.

In addition to leading cloud infrastructure projects, I've contributed to open-source automation tooling, mentored junior engineers, and shared insights through writing and technical talks. I aim to bring this practical foundation into collaborative academic environments working on secure, distributed AI systems.

I am particularly inspired by work such as **Lockdown (Georgia Tech)** and **AI Safety Science (CMU)**, and hope to support such efforts by contributing engineering insight and systems-level experience to meaningful research and hope to support similar efforts by contributing engineering insight and systems-level experience to meaningful research in this domain