Philip Robert Montgomery

Philipmon614@gmail.com | (630) 664-5406 | www.linkedin.com/in/philipm614 | http://philiprmontgomery.com/

EDUCATION

University of Illinois at Urbana-Champaign *August 2022 – May 2025*

Bachelor of Science in Computer Science and Economics

WORK EXPERIENCE

Geni | *Co-Founder* *August 2023 - Present*

- **Created** a scalable full-stack platform using Next.js, TypeScript, and Docker that orchestrates seven distinct AI models to generate math assignments personalized to each student's interests and background in a class.
- **Executed** a grassroots sales strategy by physically door-to-door prospecting 200+ schools in 20 days and converting 12 into paying customers, generating $20,000 in Annual Recurring Revenue (ARR).
- **Engineered** a custom content pipeline by fine-tuning three open-source Large Language Models (LLMs) and training one proprietary model to ensure K-8 pedagogical accuracy.
- **Scaled** the user base from 0 to 1,000+ Monthly Active Users (MAU) in 60 days, optimizing the PostgreSQL/Redis backend to handle real-time content generation loads.
- **Secured** acceptance into the University of Illinois iVenture Accelerator (top 8% of applicants), winning $10,000 in non-dilutive funding and strategic network support.
- **Established** a partnership with Vela (an organization that funds 1000+ microschools) to expand market reach, culminating in a presentation to hundreds of microschool founders in Washington, D.C.

University of Illinois Nuclear (NPRE) Department | *Research Engineer* *October 2022 - May 2024*

- **Engineered** a natural language interface using a fine-tuned Llama 2 model and vector database to interpret complex reactor telemetry, enabling operators to make data-driven safety decisions without advanced physics training.
- **Developed** a high-fidelity simulation of the Illinois Micro Modular Reactor (MMR) using C++ and the MOOSE framework to generate export-controlled training data for the AI system.
- **Validated** the platform as a proof-of-concept through presentations to Idaho National Laboratory (INL), demonstrating its utility for safety-critical reactor operations.

PROJECTS

Knowledge-Graph Question Answer System *March 2024*

- Created a natural language system for interfacing with content-rich knowledge graphs, to efficiently give more context to Large Language Models.
- Used as a component in the chatbot system for NPRE 247 (a nuclear engineering course at the University of Illinois).

Story-Writing Large Language Model *September 2023*

- Fine-tuned a Large Language Model to craft stories with higher creative prose and specialized focus on literary devices.
- Utilizes Meta's Llama 2 LLM and fine tuned using QLora techniques to save on training time and cost

High-Temperature Gas Reactor Simulation *December 2022*

- Collaborated with Nuclear Engineering PhD students on designing the necessary components, formulas, and structure for the reactor simulation.
- Utilized Idaho National Laboratory's Multiphysics Object-Oriented Simulation Environment (MOOSE) to implement a simulation for a High-Temperature Gas Reactor
- Involved using C++ to write simulation code for multi-phase fluid flow, core structure, heat transfer, etc. to craft a realistic simulation environment.

SKILLS

Languages: Python, TypeScript, C++, C, CSS, HTML, MIPS Assembly, SQL, English, Chinese

Frameworks & Web: Next.js, React Native, Tailwind CSS, Docker, AWS, GCP, PostgreSQL, Redis, MongoDB

AI & Data: PyTorch, LLM Fine-Tuning, RAG (Retrieval-Augmented Generation), MOOSE