

Sean Allen Siegfried R. Bugarin

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EDUCATION

Duke University (Duke) & Duke Kunshan University (DKU) Dual Degree Class of 2026.5
B.S. in Applied Mathematics and Computational Science; Track in Computer Science (DKU) Kunshan, Jiangsu, China
B.S. in Interdisciplinary Studies; Computer Science (Duke) Durham, U.S.A

- Full Tuition Scholarship Recipient
- Relevant Coursework: Data Structures, Algorithms, Advanced Calculus, Multivariable Calculus, Linear Algebra, Introduction to Databases, Computer Organization, Numerical Analysis

PROGRAMMING LANGUAGES & FRAMEWORKS

- Languages:** Python, Java, Javascript, MySQL, C++
- Frameworks:** PyTorch, TensorFlow, React, Hugging Face Transformers, LangChain, Pandas, Scikit-learn
- Tools:** OpenAI API, Docker, Ubuntu-Linux, Git, Jupyter Notebook, Phoenix-on-Azure, Q-GIS

PROFESSIONAL EXPERIENCE

Hinton Innovations, Software Engineer October 2025-Present
(AI Startup), Hong Kong Sar

- Developed and maintained frontend applications using **React.js, JavaScript, and Python**, focusing on responsive and scalable UI components.
- Initiated** and led UI/UX improvements, translating **Figma** designs into clean, user-friendly interfaces.
- Managed frontend dependencies and build workflows using **npm** and modern frontend tooling.

ChatDKU, Student Worker August 2024-December 2025
(Edge Intelligence Lab), Jiangsu, China

- Deployed **Qwen3-8B** in a production-grade **Python-based Agentic Retrieval-Augmented Generation (RAG) pipeline**, boosting response relevance by **30%** through **retrieval optimization**.
- Optimized **semantic search mechanisms** by implementing advanced indexing strategies for vector embedding with **Chroma DB** and integrating **prompt engineering techniques**, achieving a reduction in hallucination rates by 25%, which bolstered the accuracy of responses in deployed applications.
- Created an **automated evaluation pipeline** leveraging **OpenAI's Evals API** and using **JSON** format, dynamically scoring query quality to enhance retrieval effectiveness before inference.

RESEARCH

ChangLab, Data Scientist April 2025-August 2025
(Duke Compute Cluster), China & United States

- Collected, curated, and pre-processed over **2 million GPS trajectories** from Geolife, MOBIS, and SHL datasets, engineering domain-specific features such as **time differences, speed, and distance** to enhance transformer-based LLM training.
- Conducted detailed **trip purpose analysis**, classifying journeys across **5+ transportation modes** by examining data modalities and distributions to extract meaningful **mobility patterns**. Used **pandas** to visualize these datasets.
- Designed and maintained a scalable **MySQL database** handling **2M+ trajectories**, optimizing data retrieval and used it to run **Graph Neural Network (GraphSAGE)** model training and deployment.

Optimizing LLMs For Enhanced Question-Answering, Student Researcher June 2024-August 2024
(Kunshan Supercomputing Center), Jiangsu, China

- Researched methods on **fine-tuning** and **evaluation** of retrieval models, integrating **LlaMa3 8B** with RAG to enhance knowledge updates for question-answering systems.
- Developed a **relevancy filtering mechanism** using **cosine similarity (threshold > 0.6)**, improving efficiency by eliminating irrelevant queries before processing.
- Benchmarked and finetuned the **all-mpnet-base-v2 embedding model** and applied **RAGAs (RAG Assessment)** for evaluation, achieving improvements in key metrics: **Hit Rate (0.704 to 0.852)**, **Faithfulness (0.720 to 0.781)**, and **Context Precision (0.772 to 0.838)**.

LEADERSHIP

Campus Connect July 2024-December 2024
Full-Stack Developer Jiangsu, China

- Developing a **campus social media platform** using **WordPress**, integrating essential plugins like **Elementor** and **Jet Engine** for user engagement, customizing themes for branding, implementing **user authentication** for security, and preparing for launch to increase student engagement.

Campus Activity Board June 2023-May 2024
Event Coordinator Jiangsu, China

- Spearheading the planning and execution of future events as an Event Coordinator, assuming responsibility for the creation and implementation of **event blueprints, event programming**, and material preparation.

ADDITIONAL INFORMATION

- Languages:** Filipino (Native), English (Native), Spanish, (Conversational), Mandarin (Beginner)