




Reginald Bain, Ph.D.

Data Scientist | Physics PhD | Experienced Researcher and Educator

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EDUCATION

Duke University

Ph. D., Physics | 2017

University of South Carolina

B.S., Physics & Mathematics,
summa cum laude | 2012

TECHNICAL SKILLS

Programming

Python, Pandas, Scikit-learn, Keras, TensorFlow, LangChain, Streamlit, Selenium, PyTorch, PySpark, SQL, Git, Bash, Tableau, AWS, Terraform, Apache Airflow, Flink, Spark, Superset

Other Skills

Machine Learning, Deep Learning, Statistics, NLP, Data Visualization, Time Series, RAG, LLMs

SKILLS & CERTIFICATIONS

The Erdos Institute (Ohio State —
Intensive Data Science Bootcamp -
Top Project Award, *Deep Learning*
Bootcamp - Top Project Award

Coursera — *Data Engineering*
Specialization, *Deep Learning*
Specialization, *Machine Learning*,
TensorFlow Developer Specialization,
Google Project Management
Certificate

HackerRank — *Advanced SQL*
Certification, *Python Certification*

HONORS & AWARDS

NSF Graduate Research Fellow

Barry M. Goldwater Scholar

Phi Beta Kappa

Mary Creason Memorial Teaching
Award (Duke)

Nina and Frank Avignone Physics
Award (UofSC)

PROFESSIONAL EXPERIENCE

Physics Instructor | South Carolina Governor's School for Science & Mathematics | Hartsville, SC | 2019 - Present

- Designed 6+ college-level physics courses/labs, leveraged contemporary education research, emphasized data analysis skills
- Served as faculty senate officer for 3+ years. Helped devise and implement new policies on curriculum, faculty policies, etc.
- Mentored dozens of students on communicating scientific research. Designed independent study on mathematical physics.

Instructional Assistant Professor of Physics | University of Houston Houston, TX | 2017 - 2019

- Taught 12+ large-enrollment introductory physics courses each with 300+ students. Supervised dozens of undergraduate and graduate TAs through courses and a drop-in tutoring center.
- Piloted innovative inquiry-based course in UH Active Learning Classroom facility. Designed innovative online materials.

RESEARCH EXPERIENCE

NSF Graduate Research Fellow | Duke University | Durham, NC | 2012 - 2017

- Improved industry standard approach to modeling quark interactions. Leveraged programming (C++), mathematics, analysis of large data sets, numerical methods, and data visualizations.
- Published 3 papers, including one in the top physics journal, Physical Review Letters. Presented research at 6+ conferences in the US and abroad. Collaborated across multiple universities/national labs.

Undergraduate Researcher | University of South Carolina | Columbia, SC | 2008 - 2011

- Implemented machine learning algorithms in C/C++ for Monte Carlo simulations of collisions at the Large Hadron Collider. Developed techniques to identify theorized new particles.
- Presented at 2 national conferences and won 2 national awards, Goldwater Scholarship and NSF GRFP.

DATA SCIENCE PROJECTS

Predicting College Football Outcomes — Scraped data from web sources, did extensive EDA/feature engineering. Compared regression models and beat naive forecast by 40+%. Created Streamlit app to explore the data/model for every team. Received *Top Project* award from Erdos Institute.

Course Assistant Bots — Built 2 NLP-based course assistant tools: **Syllabus Analyzer** and **Course Review Analyzer**. Built RAG pipeline using LangChain that assesses course syllabi using open-source LLMs. Made pipelines for identifying meaningless course reviews and predicting review sentiment. Built Streamlit apps allowing users to analyze their own syllabi/reviews.

Song Similarity Detector — Built song similarity detector in PyTorch that beats naive baseline by 80+% using 128-dim embeddings of songs. Built CNN, fine-tuned pre-trained architectures such as ResNet-18/transformers. Scraped data from APIs and processed audio. Received *Top Project* award from Erdos.