

Bernard Benson, PhD

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Summary

Research Scientist with more than five years of research and development experience driving impactful data solutions across diverse industries, including transportation, logistics, space science, and scientific research. Proven ability to develop and deploy advanced machine learning models for predictive analytics, natural language processing, and computer vision applications. Expertise in leveraging deep learning techniques, Retrieval Augmented Generation (RAG) architectures, and time series forecasting to solve complex business challenges and optimize data-driven strategies. Proficient in Python and SQL with a strong understanding of cloud frameworks such as AWS, Azure and Google Cloud.

Technical Skills

- Programming Languages: Python, SQL, C++
- Machine Learning: Supervised & Unsupervised Learning, Feature Engineering, Model Evaluation & Optimization
- Deep Learning: Neural Networks (CNNs, RNNs, LSTMs, Transformers), TensorFlow, PyTorch, Keras
- Data Analysis & Visualization: Pandas, NumPy, Matplotlib, Seaborn, Plotly, Power BI
- NLP & Computer Vision: Text Preprocessing, Sentiment Analysis, BERT, OpenCV
- Cloud & DevOps: AWS, Azure, Google Cloud Platform (GCP)
- Software Development: Git, Agile, CI/CD Pipelines, Docker, REST APIs, ETL Pipelines, Unit and Integration testing, Technical Writing

Experience

Research Scientist IV, Step 4, NASA ODSI, UAH – Huntsville, AL May 2025 – Present

- Developed ensemble large language models for multi-label text classification of scientific documents.
- Developed a search wrapper to modernize NASA Science Discovery Engine's backend using OpenSearch.
- Researched and developed MCP tools for PDS4 and SDE data search agents.

Generative AI Solutions Architect, Megan Soft VA – Remote December 2024 – May 2025

- Developed an evaluation framework for generative AI chatbots and RAG systems using DeepEval and Ragas.
- Established KPIs and testing procedures to optimize performance and user satisfaction.
- Designed multi-chatbot strategies for scenarios with chatbots having overlapping capabilities.
- Designed and implemented recommender systems for pharmacy benefits management.

Data Scientist, McLeod Software – Birmingham, AL

Aug 2021 – Nov 2024

- Led the development and deployment of machine learning models that predicted freight rates for over 1,100 trucking organizations, improving pricing accuracy and efficiency.
- Reduced customer support resolution times by designing and implementing Retrieval Augmented Generation (RAG) based natural language chatbots.
- Automated document classification processes by building and deploying LayoutLMV2-based machine learning models, increasing efficiency and accuracy.
- Spearheaded the research and analysis of AI applications within the transportation and logistics industry to identify opportunities for innovation and growth.
- Represented McLeod Software as a conference speaker at various industry events, sharing expertise and insights on AI in transportation and logistics.

Applied ML Researcher, Frontier Development Lab, Remote

June 2021 – Aug 2021

- Applied machine learning techniques to analyze and model the impact of solar drag on satellite orbits as part of a NASA-sponsored research project.
- Developed a sophisticated multi-variate time series model based on deep neural network ensembles to accurately predict space weather indices.
- Collaborated effectively within a high-performing research team, resulting in a team excellence award.

Graduate Teaching Assistant, UAH, Huntsville AL

Aug 2016 – May 2021

- Managed and supervised lab sessions for CPE211L Introduction to Programming using C++.
- Managed and supervised the EE316 Electrical Circuits and Electrical Design Lab, ensuring a safe and productive learning environment for students while providing technical assistance and guidance.

RF Engineer, Nexgen Wireless/Global Telecom Associates, Milwaukee, WI March 2013 – March 2016

- Analyzed drive test data and network logs to identify and resolve coverage gaps and interference issues, resulting in improved network performance and customer satisfaction.
- Utilized heatmaps and coverage plots to effectively visualize network performance data, facilitating data-driven decision-making and optimization efforts.

Education and Certifications

University of Alabama in Huntsville, Ph.D. in Electrical and Computer Engineering

University of Alabama in Huntsville, M.S in Electrical and Computer Engineering

Geethanjali College of Engineering & Tech. B. Tech in Electrical Engineering