Erica **Brooks**

Data Scientist | Machine Learning Engineer

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Summary

An aspiring machine learning engineer with a strong foundation in the design and optimization of software systems, machine learning models, and training programs. Currently enrolled in a Master's degree program with hands-on experience from academic and personal projects.

Skills

Programming	Python, R, SQL, SAS, LaTex
Packages	NumPy, Tensorflow, Keras, PyTorch, Pandas, Matplotlib, Plotly, Scipy, Librosa, Whisper, SciKit-Learn
Tools	VSCode, RStudio, Github, AWS, GCP, Jupyter(Anaconda), Milvus VDB, Docker, PowerBI, Tableau
Machine Learning	NLP, Linear/Logistic Regression, Decision Trees and Forests, Support Vector Machines, Transformers, Gradient Boosting Machines, Clustering (K-means, KNN, DBSCAN), Principal Component Analysis (PCA)
Deep Learning	LLMs, Convolutional Neural Networks (CNN), Recurrent Neural Networks (RNN), Generative Adversarial Networks (GAN), Reinforcement Learning (RL)
Core Competencies	Machine Learning and AI Algorithms | Data Science and Statistical Analysis | Software Validation and Compliance | System Performance Optimization and Cross-Functional Team Collaboration | Training and Mentorship | Data Engineering | Digital Transformation and Automation | Natural Language Processing | Project Management Leadership | Cloud Computing and Infrastructure Management | Model Deployment and Scaling, Standard Operating Procedures (SOPs) Development

Professional Experience

Bausch + Lomb

Greenville, SC

Quality Software Specialist

Safeguard the accuracy and compliance of computerized laboratory systems through meticulous data evaluations and rigorous validation techniques. *Oct 2019 - Present*

- Drafted, updated, and refined Standard Operating Procedures (SOPs), validation protocols, user requirements, and memos by following strict adherence to industry best practices.
- Digitized and streamlined multiple lab and operational processes, converting them into electronic formats to enhance workflow efficiency, improve data accuracy, and reduce manual errors.
- Implemented and deployed digital solutions across teams, resulting in faster decision-making and improved operational productivity.
- Upscaled system performance and user experience by directing and enabling change request processes.

Bausch + Lomb

Greenville, SC

Associate Trainer III

Trained and mentored new associates in the operational procedures, product knowledge, and quality standards in line applicable compliance with regulatory requirements and company policies. *Jul 2014 - Oct 2019*

- Developed and launched video training programs, resulting amplifying team engagement and knowledge retention, leading to improved training efficiency and reduced on-boarding time.
- Drafted and enforced e-learning materials for site and departmental use, aimed at streamlining training processes and improving accessibility for remote and in-person employees.
- Revamped and updated the training process, integrating multimedia content to accommodate diverse learning styles and improve overall training effectiveness.
- Cut training time through the creation of streamlined by keenly focus on training materials, resulting in improving learning retention and reducing on-boarding duration.

Siemens (BASF Chemical Company)

Anderson, SC

Additional Experience:

Lead Computer Operator II *Sept 2005 - Nov 2013*

- Oversaw system performance and application batch processing, resolving hardware failures and initiating system restores.
- Managed operations in the LAN/Server room, ensuring seamless system functionality and infrastructure reliability.
- Diagnosed and resolved system failures, proactively addressing issues that impacted business productivity.
- Optimized batch job schedules and performed database and file restores, ensuring efficient operations and data integrity.

Projects | Research

Voice Biometric Authentication GitHub | Journal | Youtube

Author | Capstone Project

- Implemented a voice biometric authentication system, enhancing user interactions by personalizing and streamlining device experiences.
- Developed a multi-modal, web-based UI for seamless data capture, integrating voice print data for real-time authentication and validation.
- Integrated Milvus VDB for efficient storage and retrieval of voice prints, optimizing system performance and scalability.
- Utilized advanced tools (Librosa, Milvus, Docker, Whisper LLM) and published findings in the SMU Data Science Journal Review, contributing to innovations in biometric authentication.
- Containerized the full application using Docker, enabling consistent and reproducible environments across development and deployment stages.
- Deployed the application to Google Cloud Platform (GCP) using Cloud Run, ensuring secure, scalable, and serverless execution of the authentication service.
- Configured CI/CD pipelines and environment variables for smooth deployment and automated updates via GCP.

Aligning AI Models with Human Values Youtube

Machine Learning 2 (class) Project

- Investigated the alignment of AI models with human values through direct evaluator feedback, optimizing human-AI interaction.
- Demonstrated Reinforcement Learning with Human Feedback (RLHF), detailing its role in refining AI decision-making and ethical alignment.
- Analyzed the application of Proximal Policy Optimization (PPO) to improve AI performance through effective learning strategies.
- Integrated RLHF and PPO methodologies to enhance AI model behavior, ensuring the models more accurately reflect human preferences.

Dense Neural Network for Predicting Class GitHub

Quantifying the World (class) Project

- Developed a binary dense neural network classifier to predict outcomes from a moderate-size dataset, improving classification accuracy.
- Applied advanced data preprocessing techniques, optimizing dataset quality for more precise model evaluation.
- Constructed a PyTorch-based feed-forward neural network model, delivering exceptional prediction performance.
- Designed a custom cost function to account for business impact, prioritizing the mitigation of misclassification risks and enhancing decision relevance.

Education

Southern Methodist University — *Dallas, TX*

M.S. in Data Science, **GPA:** 3.5 — *2023 - 2025*

East Tennessee State Uiversity — *Johnson City, TN*

B.S. in Computer Science, Minor in Management — *2002 - 2005*

Licenses + Certifications

Project Management Institute — *National*

Project Management Professional, PMP — *April 2022 - April 2025*