

# Erica Brooks

DATA SCIENTIST

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## Summary

Aspiring data scientist with a strong foundation in designing and optimizing 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

<b>Programming</b>	Python, R, SQL, SAS, LaTeX
<b>Packages</b>	NumPy, Tensorflow, Keras, PyTorch, Pandas, Matplotlib, Plotly, Scipy, Librosa, Whisper, SciKit-Learn
<b>Tools</b>	VSCode, RStudio, Github, AWS, Jupyter(Anaconda), Milvus VDB, Docker, PowerBI, Tableau
<b>Machine Learning</b>	NLP, Linear/Logistic Regression, Decision Trees and Forests, Support Vector Machines, Transformers, Gradient Boosting Machines, Clustering (K-means, KNN, DBSCAN), Principal Component Analysis (PCA)
<b>Deep Learning</b>	LLMs, Convolutional Neural Networks (CNN), Recurrent Neural Networks (RNN), Generative Adversarial Networks (GAN), Reinforcement Learning (RL)
<b>Core Competencies</b>	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

Oct 2019 - Present

EVALUATIONS AND RIGOROUS VALIDATION TECHNIQUES.

- 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

Jul 2014 - Oct 2019

STANDARDS IN LINE APPLICABLE COMPLIANCE WITH REGULATORY REQUIREMENTS AND COMPANY POLICIES.

- Developed and launched video training programs, resulting in 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 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

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## Voice Biometric Authentication [GitHub](#) | [Journal](#) | [PowerPoint](#)

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.

## 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

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## Southern Methodist University

Dallas, TX

M.S. IN DATA SCIENCE, GPA: 3.5

2023 - 2025

## East Tennessee State University

Johnson City, TN

B.S. IN COMPUTER SCIENCE, MINOR IN MANAGEMENT

2002 - 2005

# Licenses + Certifications

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## Project Management Institute

National

PROJECT MANAGEMENT PROFESSIONAL, PMP

April 2022 - April 2025