Daryl Roberts   AI/ML Engineer

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Highly motivated and fast learning Machine Learning Engineer with a results-oriented background in Operations Management. Proven ability to leverage data analysis and problem-solving skills to drive significant improvements. Eager to transition my expertise in data acquisition, engineering, and model building to support advanced analytics initiatives and work with unique datasets to solve unique problems.

TECHNICAL SKILLS

Proficient: *Deep Learning, Predictive Modeling, Statistical Analysis, Data Wrangling, Deep Neural Networks, Data Visualization, Data Science, Computer Vision, Algorithms, Natural Language Processing, Image Processing, Jupyter Notebooks, Python, Algorithms, Pattern Recognition, TensorFlow, Pandas, Numpy, Microsoft Office, Git/Version Control, Feature Engineering*

Knowledgeable: *PyTorch, SQL (MySQL, PostgreseSQL), Langchain, Llama Index, Flowise, RAG/Agentic RAG, OpenCV, Web Scraping (Beautiful Soup), Requests(API calling), Huggingface/Transformers, GPU Programming*

Additional Relevant Skills: *Communication, Problem Solving, Fast Learner, Leadership, Resourceful, Logical, Public Speaking, Critical Thinking, Process Management, Curious Mindset*

TECHNICAL PROJECTS

Exoplanet Identification Using Clustering (Unsupervised Learning) | Jun/2024 | [Github](#) | [Website](#)
- **Employed Python libraries like Pandas, NumPy, and scikit-learn** to explore exoplanet features, identify patterns, and perform unsupervised machine learning using K-Means clustering to categorize exoplanets based on their characteristics.
- **Conducted Feature Engineering and Data Exploration** by calculating summary statistics and creating new features to gain deeper insights into the relationships between existing exoplanet properties.
- **Utilized Principal Component Analysis (PCA)** to reduce the number of features for visualization purposes and created interactive scatter plots with Plotly to effectively visualize the distribution of exoplanets within the identified clusters.
- **Analyzed the characteristics of each cluster** (means of features like radius, mass, and orbital period) to draw conclusions about the potential types of exoplanets within each group, effectively communicating scientific findings.

Breast Cancer Tissue Classifier (Binary Classification/End-to-End Web App) | Jun/2024 | [App](#) | [Github](#) | [Website](#)
- **Built a user-friendly web application using Streamlit,** allowing users to input cell tissue measurements through sliders and visualize their data with an interactive radar chart.
- **Trained and evaluated four machine learning models for breast cancer classification:** XGBoost, Logistic Regression, Random Forest, and Kernel SVM. Employed techniques like handling missing values, label encoding, train-test split, and standardization.
- **Integrated a user interface element for selecting the desired classification model.** Implemented functions to scale user input data, make predictions based on the chosen model, and display results with prediction probabilities and a classification report.

Arxiv Research Assistant (RAG Chatbot/End-to-End Web app) | May/2024 | [App](#) | [Github](#) | [Website](#)
- **Implemented a chatbot powered by RAG techniques** and crafted effective natural language prompts to guide the retrieval process fetching the most relevant research papers from the Arxiv repository.
- **Built a user-friendly web application** using streamlit to deliver the research assistant functionality in a readily accessible format.
- **Agent automatically generates papers** with links, summaries of the relevant papers, and an informed recommendation on which of the relevant papers best fits the user's project. The agent then generates and manages a database to store/retrieve the information within the papers.
- **Built in "Chat with Paper" Function** that allows users to ask follow-up questions or seek clarification directly within the application, enhancing the user experience and promoting deeper engagement with the research material.

AudioBook Generator/Custom Voice Clone (Text-to-Speech/Voice Cloning) | May/2024 | [Github](#) | [Website](#)
- **Designed and implemented a high-fidelity TTS model using Coqui TTS** with PyTorch and torchaudio. Leveraged Natural Language Processing (NLP) techniques using NLTK for text pre-processing, including sentence tokenization with preserved punctuation.
- **Integrated TTS models for real-time speech generation.** Represent expertise in audio manipulation (concatenation, playback rate adjustment) and pioneered a method for smoother audio transitions using overlap-and-add.
- **Developed a text-to-audiobook pipeline** that segments text, synthesizes speech for each segment, and concatenates them for seamless audio creation.

Capuchin Bird Population Density (Audio) | Apr/2024 | [Github](#) | [Website](#)
- **Developed an audio classification model** using convolutional neural networks to identify Capuchin bird calls in rainforest recordings.
- **Analyzed audio data** through normalization, spectrogram conversion, and model training to accurately estimate bird population density.
- **Achieved 100% precision** on the classification task.

Tesla CNN (Computer Vision) | Apr/2024 | [Github](#) | [Website](#)
- **Conducted research on convolutional neural networks** for vehicle classification and bounding box prediction to improve Tesla Autopilot safety.
- **Trained and evaluated multiple vision models using YOLOv8** to achieve accurate predictions for object detection and classification.

Pubmed 200K (NLP) | Mar/2024 | [Github](#) | [Website](#)
- **Implemented sentence classification for medical research papers** using techniques from the [Pubmed 200K model](#).
- **Preprocessed unstructured text data** and created word embeddings for training multiple classification models.
- **Developed a high-performing model** by combining character and token level embeddings with positional encodings, achieving an F1-score of 0.85.

EDUCATION

Louisiana State University   Oct/2023- May/2024
Powered by Fullstack Academy
Immersive AI & Machine Learning program which utilized active learning to gain proficiency in data technologies and tools including Python, Keras, and TensorFlow, and understanding of machine learning, deep learning, and data science processes.

Zero To Mastery Academy   Jan/2024 - Apr/2024
[Tensorflow Developer Certificate Bootcamp](#)
Intensive, hands-on bootcamp focused on developing modern deep learning solutions with TensorFlow. Acquired comprehensive skills through practical projects and exercises, including tensor operations, GPU utilization, model optimization, feature extraction, fine-tuning pre-trained models, natural language processing (NLP), word embeddings, and time series forecasting using RNNs and CNNs.

ADDITIONAL TRAINING

Machine Learning Model Deployment with Streamlit, Udemy (In Progress)
Knowledge Graphs for RAG, DeepLearning.AI (In Progress)
The Git & Github Bootcamp, Udemy (In Progress)
Artificial Intelligence A-Z, Udemy (In Progress)
The Complete SQL Bootcamp, Udemy [Certificate](#) - May 2024
Building Agentic RAG with Llamaindex, [DeepLearning.AI](#) - May 2024
Python for Computer Vision with OpenCV and Deep Learning, Udemy [Certificate](#) - Mar 2024
Machine Learning A-Z, Udemy [Certificate](#) - Feb 2024
Deep Learning A-Z, Udemy [Certificate](#) - Feb 2024

EXPERIENCE

Operations Manager | Hugg and Hall Equipment | Baton Rouge, LA
10/2017 - 02/2024

- Spearheaded comprehensive reforms to revitalize department and repair strained client relationships, resulting in a remarkable 30% year-over-year increase in net profit within my first year.
- Nearly doubled sales for over-the-counter parts customers through implementation of strategic initiatives.
- Analyzed vendor pricing to identify areas of overspending, leading to optimization of procurement processes and strengthened partnerships.
- Restored relationships with high-value clients, including multi million-dollar corporations, fostering trust and loyalty.
- Immersed in understanding market landscape and competitors' portfolios to position the company as a leader in innovation and excellence within our niche.
- Traveled to multiple states across company territory to lead company-wide implementation of the successful branch reforms I incorporated in my own workflow.
- Achieved record-breaking sales of $315k in the first month, followed by a sustained increase to $500k within 90 days, revitalizing a previously underperforming branch.

MILITARY SERVICE

Position Title: Sergeant
Branch: Marine Corps
Dates: May 2014 - June 2020

Accomplishments:
- Strategically planned and executed motor transport operations as a Platoon Sergeant, ensuring optimal troop pickups and mission success through meticulous route planning and utilization of maps, grids, and enemy intel.
- Demonstrated continuous learning and adaptability by excelling in diverse roles within the Marine Corps, showcasing a commitment to excellence and a thirst for knowledge essential for staying abreast of cutting-edge technologies and methodologies.
- Led by example, fostering resilience and resourcefulness within the team, and prioritized safety and efficiency in convoy operations, resulting in the successful completion of missions despite adversity.
- Provided career coaching and mentorship to 70+ Marines, including performance reviews, billet assignments for skill development, and individualized career development plans.