NIVEDHA BALAKRISHNAN
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TECHNICAL SKILLS

Languages: Python, SQL, R, MATLAB, MongoDB, C, C++, C#, HTML, CSS, JavaScript.
Tools and Technologies: Scikit-Learn, Keras, TensorFlow, PyTorch, Hugging Face, LangChain, Flask, AWS, GCP, Tableau.
AI Techniques: Statistical Models, Machine Learning, Deep Learning, NLP, Transformers, Generative Models.

TECHNICAL PROJECTS

A Transformers Insight: Discovering Sentiments in Dating App Reviews (GitHub)
Harnessing the power of cutting-edge NLP techniques & transformers to understand the sentiment behind dating app reviews.
- Implemented **Vader** sentiment analysis and the **RoBERTa** transformer model to identify the sentiments in the reviews.
- Developed a Q&A bot using **LangChain** and **GPT-3.5** Turbo model to interact with reviews, extracting insights for a deeper understanding of user perspectives.

Generative Dialogue Summarization: Insights for Enhanced Service and Satisfaction (GitHub)
Revolutionizing customer service-client dialogue summarization using the FLAN T5 model for enhanced efficiency and insights.
- Utilized hugging face's **FLAN-T5** model to enhanced dialogue summarization in **AWS Sagemaker**.
- Directed the model using **prompt engineering** techniques and optimized it using fine-tuning techniques **LoRA/PEFT** evaluated performance with **ROUGE** metrics for targeted summarization.

MLOps driven News Article Search Relevancy with SBERT (GitHub)
An End-to-End ML Ops project using SBERT transformer model to enhance news article search relevancy.
- Developed an advanced search algorithm utilizing **SBERT** and **ANNOY**, seamlessly integrated it on **GitHub**, and efficiently **deployed** it on **AWS EC2** via a docker container for optimal performance.

Building a Comprehensive Analytical Ecosystem on AWS for E-commerce (GitHub)
Developed AWS data pipeline for real-time website intrusion detection and continuous monitoring.
- Developed and deployed **end-to-end ETL** (Extract, Transform, Load) **data pipeline in AWS** using S3, Apache Flink, Kinesis, DynamoDB, Glue, Lambda, and SNS ensuring highest level of security.
  - Created a dashboard using **Tableau** to deliver **real-time insights** that drive informed business decisions.

WORK EXPERIENCE

Graduate Research Assistant | San Jose State University (Sep 2021 - Present) (GitHub)
Research project using ML to discover new drugs to treat thrombosis (Accelerated the process by 10-15 years).
- **Phase 1**: Developed and deployed a **ML pipeline** utilizing **Google Cloud Platform** (GCP) to identify and predict anti-thrombotic peptides & their corresponding inhibition constant respectively.
  - Tested model with 10M peptides, refining 50k hits through clustering and docking, resulting in 21 peptides.
  - Utilized Google Cloud Platform's **Cloud Run** to containerize and integrate the model into the website.
- **Phase 2**: Leveraging Protein language models, such as **ProtTrans** and **ProtBERT**, for feature extraction (embeddings), with the goal of creating informative attributes from the dataset.
  - **Fine-tuned** the transformer models using our dataset to optimize performance.

Data Science Intern | Integrum AB, Sweden (May 2019 – Apr 2020)
Worked on an AI-based new therapeutic product to reduce Phantom Limb Pain for amputees.
- Developed **ML model** to predict hand movements from EMG signals obtained from amputees, utilizing features extracted from EMG signals through signal processing techniques in **MATLAB**.
  - Optimization resulted in **8% improvement** in the model performance.
  - Incorporated and **deployed** optimized ML model using **C++** into the electronic device.
- Investigated the distinct characteristics between different hand movements using **K-Means Clustering** algorithm.
  - Assisted in establishing effective therapeutic procedures based on the insights.

Computer Programmer | Cognizant Technology Solutions, India (Jun 2016 – Jun 2017)
*Assisted with healthcare insurance **website development** to enhance customer experience.*
- Developed and tested front-end components of the website using HTML, CSS and **JavaScript** while ensuring seamless integration with back-end systems.
  - Provided more efficient and user-friendly platforms for customers.

EDUCATION

San Jose State University   Aug 2023
Master of Science in Data Analytics (Awarded Academic Scholarship)

Linkoping University, Sweden   May 2020
Master of Science (Master Thesis in Artificial Intelligence)

Anna University, India   May 2016
Bachelor of Engineering (Awarded Best Outgoing Student of the Year 2016)
Received **Patent from Intellectual Property India** for an innovative product *Nylon Fabricated Bone Immobilizer using Rapid Prototyping* in the field of orthopedics.

VICE PRESIDENT (Ex-PRESIDENT) of the Machine Learning Club at SJSU

*Active member of ML club for two years, dedicated to learning, **mentoring** & sharing knowledge with like-minded enthusiasts.*
- Driving the club towards long-term goals and creating a comfortable learning environment for students.
  - Conducted ML hands-on sessions for students, covering beginner to advanced topics.
  - Collaborated with other officers to plan and organize events for the club.