NIVEDHA BALAKRISHNAN
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EDUCATION

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

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

Anna University, India May 2016
Bachelor of Engineering Biomedical 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.

TECHNICAL SKILLS

• Machine Learning • Deep Learning • Natural Language Processing • Data Analysis

Languages: Python, SQL, MongoDB, R, MATLAB, C#, HTML, CSS, JavaScript.
Visualization Tools: Matplotlib, Seaborn, Plotly, Tableau, Power BI, MS Excel.
Tools and Technologies: Scikit-Learn, TensorFlow, Keras, Pandas, NumPy, NLTK, Flask, AWS.

WORK EXPERIENCE

San Jose State University | Graduate Research Assistant (Jan 2022 - Present) (GitHub)
Research project using ML to discover new drugs to treat thrombosis (Accelerated the process by 10-15 years).

- Developed two-staged ML pipeline with a **Classification** and a **Regression** model to identify and predict the anti-thrombin peptides and their corresponding inhibition constant value respectively.
  - Tested the model with 10 million peptides and identified 7060 unique peptides with antithrombotic activity.
  - Utilized **Clustering** algorithms to select representative peptides with similar characteristics.
  - Selected top 10 peptides with better chance using docking scores for wet-lab experiments.
- Utilized Google Cloud Platform's **Cloud Run** to containerize and integrate the model into the website. (Website)
  - Ensured optimal performance, high availability, and seamless scalability of the model, while effectively managing traffic loads.
  - Enable research community in effectively identifying thrombin inhibitory peptides.

Integrum AB, Sweden | Graduate Intern (May 2019 – Jan 2020)
Worked on an AI-based new therapeutic product to reduce Phantom Limb Pain for amputees.

- **Optimized deep learning model** by identifying significant features extracted from EMG signals using **feature selection** techniques in **MATLAB**.
  - Resulted in **8% improvement** in the model performance.
  - Implemented these changes to the product design using **C#** for improved functionality.
- Investigated the similarities between different hand movements using **Clustering** algorithm.
  - Assisted in establishing effective therapeutic procedures based on the insights.

PROJECTS

AMP: Parkinson's Disease Progression Prediction (GitHub)
Predicting disease progression and identifying key proteins using protein and peptide data.

- Developed an **RNN-based time series forecasting model** using **Keras** to predict disease progression (UPDRS) scores for different time intervals and identified important proteins using **Feature Importance** method.
  - Enable early detection, personalized treatment planning, and effective disease management.

Swipe Right: A comparative analysis of popular dating apps (GitHub)
Conducted comparative analysis of dating apps during pandemic to identify common issues and needs for users.

- Utilized **NLP** techniques including **TF-IDF** and **Vader sentiment analysis** to analyse Google app reviews of four main dating apps (Bumble, Hinge, Match, and Tinder) and identified changes in app ratings.
  - Significant app rating changes during COVID-19 emphasize the importance of personal connections.
  - Insights gained from this analysis have the potential to enhance user satisfaction and overall experience.

Developed an End-to-End Analytical Platform using AWS Services (GitHub)
Developed AWS data pipeline for real-time website intrusion detection and continuous monitoring.

- Developed and deployed **end-to-end data pipeline in AWS** using S3, Flink, Kinesis, DynamoDB, Glue, Lambda, and SNS with security measures.
  - Developed a **comprehensive dashboard** using Tableau to analyse the user shopping journey and deliver **real-time insights** that drive informed business decisions.

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

Passionate about ML and collaboration, spent two years in ML club to learn & share knowledge with fellow 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.