Sandeep Birudukota

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EDUCATION

Master of Science in Software Engineering | GPA: 3.57/4   **Jan 2022 - Dec 2023**
San Jose State University | San Jose, California
Courses: Cloud technologies, Data Mining, Enterprise distributed systems, Business intelligence Technologies.
Bachelor of Technology in Computer Science | **Jun 2015 - Apr 2019**
Andhra University | Andhra Pradesh, India

TECHNICAL SKILLS

Programming Languages - Python, Java, C++, JavaScript, R, .NET
Databases - MySQL, Oracle, MongoDB, Redis.
Web Technologies - HTML5, CSS3, Rest API, Bootstrap, jQuery.
Frameworks - React.js, Redux, Flask, node.js, express.js, Junit, Jmeter.
Cloud Technologies - AWS (EC2, ECS, S3, RDS, Lambda).
Tools & Technologies - GitHub, Apache Kafka, Docker, Power BI, Tableau..
Machine Learning - Linear & Logistic Regression, Clustering, Time Series, Support Vector Machines, Random Forest, decision trees, Ensemble Models (Voting, Bagging, Boosting), Sentence Transformers, Neural, Convolutional, and RNN.

PROFESSIONAL EXPERIENCE

Data Science Engineer, Tata Consultancy Services, Hyderabad, India   **Aug 2021 - Dec 2021**
• Led the implementation of a sophisticated machine learning pipeline for an educational content recommendation system.
• Managed data preprocessing, leveraging pre-trained models for embeddings, and fine-tuning using ArcFace for feature differentiation.
• Developed a two-staged training and inference approach, optimizing model performance and accuracy metrics by 15%.
• Successfully integrated kNN algorithm for content recommendation, ensuring relevance and precision.
• Demonstrated expertise in model preparation, training, evaluation, and inference strategies.

Data Science Engineer, Tata Consultancy Services, Hyderabad, India   **Oct 2019 - Aug 2021**
• Developed a machine learning model to identify the root cause of a system error and provides solutions based on previous similar problems for TCS. This was used internally to decrease the workload on the Employee support team, resulting in a 50% decrease in error resolution time.
• Used Python and its machine learning libraries like scikit-learn, pandas, and numpy to preprocess the data, engineer features, select models, and evaluate the performance. Applied techniques like text classification, bag-of-words, and rule-based reasoning to classify the error and suggest appropriate solutions.
• Throughout the project, followed the Software Development Life Cycle (SDLC) and worked in an Agile environment to ensure timely completion of tasks.

Systems Engineer Trainee, Tata Consultancy Services, Kerala, India   **May 2019 - Oct 2019**
• Gained profound knowledge in **Python, OOPs through Java, SQL, Data structures, Web applications and DBMS** as a part of the Initial Learning Process (ILP) and mainstream training at Tata Consultancy Services.

ACADEMIC PROJECTS

• **Road Accident Severity Prediction -** Severity of accidents are predicted and significant features are identified such as time and weather conditions at selected locations. Performed EDA and Implemented Logistic regression, Decision tree, Random Forest, MLP, SVM and neural networks.
Tech: **Python, Matlab, Scikit-learn.** (Spring '22)
• **Stack Overflow Simulation -** Deployed 3-tier distributed web application with message queues as middle-ware and scaled horizontally to handle a load of 10,000 users fetching 10,000 messages simultaneously. Designed an interactive chat system, voting for Question - Answer and sub comments.
Tech: **React, Node.js, MySQL, MongoDB, Express JS.** (Spring '23)
• **Music Genre Classification -** Developed a model which accurately classified songs into 10 different genres using supervised and unsupervised learning techniques. By analyzing features such as tempo, pitch, spectral data and feature reduction techniques, the model successfully differentiated between various music genres.
Tech: **Python, LibROSA, MFCC, LDA, PCA, tSNE, Naive Bayes, KMEANs.** (Fall '22)
• **PotatoCo Yield Forecasting -** Developed an advanced data mining process to identify data sources, feature variables, and synthetic variables, and built a model to forecast the impact of climate change on potato production in India. It helps in the climate adaptation plans and mitigate future risks to the business.
Tech: **Python, SARIMAX, Scikit-Learn.** (Fall '22)
• **Task Manager Application -** Develop a Task Manager web application that allows users to manage their tasks, deadlines, and priorities using React for the frontend, powered by a Node.js backend with Express, and MongoDB for efficient data storage. Implemented user authentication, task management functionalities, and real-time updates using Socket.IO.
tech: **React, Node.js, MySQL, MongoDB, Express JS.** (Fall '23)