Bala Narayana Subbarao Chikkala

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CAREER SUMMARY

ML/Ai Engineer with over 3.5 years of professional experience, specializing in model building, model optimization, and Generative AI. Expert in leveraging cloud technologies for deploying scalable machine learning solutions and proficient in various deployment strategies. Highly skilled in developing and delivering high-impact solutions in Data Science and Machine Learning, with a proven track record of enhancing project efficiency and accuracy. Ready to tackle challenging roles with innovative approaches, contributing to project success and technological advancement.

EDUCATION

University of North Texas   **May 2024**
Master of Science in Data Science -   *Denton, USA*

Gitam University   **Dec 2021**
Bachelor of Engineering in Electronics and Communication Engineering -   *Vizag, India*

PROFESSIONAL EXPERIENCE

NebulAI   **July 2024 – Present**
Artificial Intelligence Engineer 🔗   *Florida, USA*

- Designed and implemented the overall architecture for AI workflows, including automated calling solutions, web scraping pipelines, and chat-bot integration's.
- Utilized Synth-Flow and Hub-Spot to create AI-driven automated calling solutions, streamlining communication processes across various business domains.
- Developed intelligent chat-bots using Kore.ai, automating website interactions and improving customer engagement through AI-powered conversations.
- Implemented a Retrieval-Augmented Generation (RAG) pipeline, increasing the accuracy and relevance of AI-generated responses by 30% through a combination of generative and retrieval-based techniques.
- Developed and deployed APIs and microservices to integrate advanced AI capabilities into new and existing applications, ensuring scalability and seamless functionality.
- Designed and maintained scalable AI infrastructure on cloud platforms such as AWS, Azure, and GCP, optimizing the deployment of LLMs like Gemini, LLaMA, and GPT.
- Fine-tuned and deployed AI models on domain-specific data, improving performance and precision in key applications.
- Collaborated with cross-functional teams to design and build cloud-based architectures that support scalable AI infrastructure for various applications.
- Led the development of automated workflows and web scraping pipelines, accelerating deployment times and improving the overall quality of AI solutions.

University of North Texas   **Aug 2022 – May 2024**
Research Associate in Data Science and Deep Learning 🔗   *Denton, USA*

- Conducted research on breast cancer prediction using histopathology images with 40x, 80x, 100x, and 200x magnification Processed and analyzed a dataset of 7,523 histopathology images to identify patterns and markers indicative of breast cancer
- Developed and compared multiple deep learning models, including a custom CNN with 5 layers, VGG-16, VGG-19, AlexNet, and GoogleNet, achieving an accuracy of 91.9% with the custom CNN model
- Speech Emotion Recognition (SER) Conducted research under a professor to develop a Speech Emotion Recognition system using deep learning models to analyze voice signals and classify human emotions. Processed voice datasets and extracted mel-frequency cepstral coefficients (MFCCs) to represent audio features. Built and evaluated multiple models, including a custom 5-layer CNN, achieving a testing accuracy of 92.9% for emotion classification.
- Demonstrated successful classification of emotions from both male and female voice data, highlighting potential applications in healthcare, education, call centers, and chatbot integration. Tools and Technologies: Utilized Python, TensorFlow, Keras, and audio processing libraries for feature extraction and model development. Research Outcomes: Provided a foundation for further SER data collection and integration with large language models (LLMs).

Accenture Technologies   Jun 2021 – Aug 2022
Machine Learning Engineer   *Hyderabad, India*

- Spearheaded initiatives leveraging extensive datasets, including millions of records from diverse domains such as finance, healthcare, and e-commerce.
- Analyzed and processed vast healthcare datasets, comprising over 10 million patient records, to develop predictive models for patient outcomes, disease progression, and resource allocation.
- Improved model accuracy by 15% through the development and implementation of sophisticated algorithms using TensorFlow and PyTorch.
- Developed and deployed predictive models that enhanced diagnostic accuracy by 20% and treatment personalization, resulting in a 15% reduction in patient readmission rates.
- Streamlined deployment times by 50% through the integration of automated workflows and robust CI/CD pipelines.
- Ensured compliance with healthcare regulations and standards (e.g., HIPAA) while managing sensitive patient data, safeguarding the privacy of over 10 million patients.
- Expedited project deliverables by 30%, ensuring timely and impactful outcomes through effective project management and collaboration
- Worked closely with data scientists, healthcare professionals, and stakeholders to deliver data-driven solutions and insights, resulting in a 25% improvement in clinical decision-making processes.
- Conducted in-depth data analysis and feature engineering, analyzing over 100 million data points to enhance model performance and business value.
- Leveraged machine learning techniques to identify key factors influencing patient outcomes, enabling targeted interventions that improved patient satisfaction scores by 18%.
- Mentored junior team members and provided training on advanced machine learning techniques and best practices, resulting in a 40% improvement in team efficiency and skill development

PROJECT EXPERIENCE

GCP Based Project   May 2024

- Conducted comprehensive analysis of sales and marketing data to identify market initiatives and target markets, utilizing Google Cloud Platform (GCP) tools. Managed and processed the entire data lifecycle, including data collection, cleaning, analysis, and visualization, ensuring data integrity and consistency. Utilized a dataset containing over 1 million sales records   .
- Executed cluster creation in GCP, leveraging BigQuery, Hive, and Spark tools for efficient data analysis and processing. Schema Design: Developed well-defined schemas using basic commands in Hive, ensuring efficient data organization and retrieval. Created and optimized queries to extract meaningful insights, leading to improved decision-making for sales and marketing strategies.
- interpreted sales records to identify states with the highest sales, providing deeper insights into product development, marketing campaigns, and inventory management.
- Tools and Technologies: Employed Google Cloud Platform, BigQuery, Hive, Spark, and advanced SQL for data processing and analysis.
- Enhanced understanding of market dynamics, leading to more effective marketing strategies and improved business outcomes.

Customer lifetime value analysis ⟳   Jan 2023

- Developed a predictive model to estimate customer lifetime value (CLV) using extensive e-commerce datasets, containing over 2 million customer records. Conducted comprehensive data cleaning, feature engineering, and exploratory data analysis to identify key factors influencing customer lifetime value. Utilized machine learning algorithms in TensorFlow and PyTorch to create and fine-tune predictive models, achieving a 90% accuracy in CLV predictions.
- Enabled businesses to identify high-value customers, optimize marketing strategies, and enhance customer retention efforts, resulting in a 25% increase in customer retention rates. TensorFlow, PyTorch, Pandas, and Scikit-learn for data processing, model training, and evaluation. Implemented logistic regression, decision trees, and XGBoost algorithms to achieve optimal prediction results.

Health insurance cost prediction ⟳   August 2022

- Developed a predictive model to estimate health insurance costs using extensive health insurance datasets, containing over 1 million records Conducted comprehensive data cleaning, feature engineering, and exploratory data analysis on health insurance datasets to identify key cost-driving factors
- Utilized machine learning algorithms in TensorFlow and PyTorch to create and fine-tune predictive models, achieving a 92% accuracy in cost predictions. Enabled more accurate cost estimations for health insurers, leading to optimized pricing strategies and improved customer satisfaction.
- Implemented linear regression, random forest, and gradient boosting algorithms to achieve optimal prediction results. TensorFlow, PyTorch, Pandas, and Scikit-learn for data processing, model training, and evaluation

SKILLS

- **Languages:** Python, SQL, NoSQL, Pyspark, Java, C++, Scala
- **Frameworks/Libraries:** NumPy, Pandas, Matplotlib, SciPy, Tensorflow, Pytorch, Keras, scikit-learn, NLTK, OpenCV, FastAI, Gradio, Streamlit, CUDA, Hugging Face
- **Data Processing/ETL Tools:** Apache Spark, Hadoop, Kafka, Airflow, PySpark
- **Data Visualization Tools:** Tableau, Power BI, Seaborn, ggplot2
- **Database Management:** MySQL, PostgreSQL, MongoDB, DynamoDB, Cassandra, Redis, ChromaDB, LlamaIndex
- **Cloud Platforms and Services:**

  - AWS: EC2, Lambda, S3, SageMaker, Bedrock, Redshift, EMR, Glue, Athena, QuickSight
  - GCP: AI Platform, BigQuery, Dataflow, Dataproc, Cloud Storage, Pub/Sub, Looker

- **Machine Learning/Deep Learning:** CNN, RNN, GAN, Linear Regression, Logistic Regression, Decision Trees, Classification, SVM, Random Forests, Naive Bayes, KNN, K Means, Transformers, MAMBA, Reinforcement Learning, A/B Testing, Hypothesis Testing, Time Series Forecasting, Supply chain, Generative Models, Large Language Models (LLMs), Multi Models, Computer Vision, Quantization, LoRA, Fine-tuning, Conversational AI
- **Developer Tools:** Git, GitHub, Docker, Jenkins
- **Big Data Technologies:** BigQuery, Redshift, Snowflake, HBase
- **Other Skills:** API Development, Microservices Architecture, Agile Methodologies, Docker