

# Sri Ganesh Vathumalli

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**Summary** — Machine Learning Engineer with expertise in Python, TensorFlow, and scikit-learn, specializing in deep learning architectures, natural language processing (NLP), and computer vision. Proficient in designing and implementing scalable machine learning solutions, with a strong foundation in statistical analysis, data modeling, and delivering actionable insights. Skilled in developing innovative algorithms and optimizing model performance for diverse applications.

## Skills

<b>Languages</b>	Python, Bash, C++
<b>AI Frameworks</b>	TensorFlow, PyTorch, scikit-learn, NLTK, Hugging Face, Transformers, Spacy
<b>Web Technologies</b>	Django, HTML, CSS, JavaScript
<b>Databases</b>	MySQL, MongoDB, PostgreSQL
<b>Cloud Technologies</b>	AWS, Azure
<b>Tools</b>	Tableau, Git, Docker, MLflow, PySpark, TensorRT, FastAPI

## Work Experience

### Deloitte USI – Analyst (Machine Learning and Data Team) Jun 2022 – Jul 2023

- Conducted internal research to develop and implement machine learning solutions, optimizing processes and addressing business challenges using Python, TensorFlow, and scikit-learn.
- Extracted, cleaned, and prepared large datasets, ensuring data quality and consistency for predictive analytics.
- Performed exploratory data analysis (EDA) and crafted insightful visualizations with matplotlib, seaborn, and Tableau to provide actionable insights for internal stakeholders.
- Partnered with cross-functional teams to design and deploy machine learning models into internal systems, leading to significant operational improvements and innovation-driven outcomes.

### Lead Squared – Data Engineering Intern Jun 2021 – Jun 2022

- Engineered scalable ETL pipelines to preprocess and transform large datasets from relational databases (MySQL, PostgreSQL), ensuring seamless integration with business analytics systems and meeting performance benchmarks.
- Designed innovative data workflows to deliver high-quality, preprocessed datasets for training machine learning models, significantly reducing training times and improving model accuracy through optimized data handling.
- Conducted advanced data preparation and exploration using pandas and SQL, and developed compelling visualizations with matplotlib, seaborn, and Tableau, enabling leadership to make data-driven decisions.
- Collaborated with cross-functional teams to integrate robust data pipelines with machine learning models, driving advanced customer segmentation and enabling personalized marketing strategies.

## Education

**Master of Science in Computer Science** Aug 2023 – May 2025  
California State University Long Beach GPA – 4.0  
Coursework: Advanced Artificial Intelligence, Machine Vision, Pattern Recognition, Data Visualization

**Bachelor of Engineering in Computer Science** Aug 2018 – May 2022  
Sathyabama Institute of Science and Technology GPA – 3.9

## Projects

### Healthcare Chatbot Using Fine-Tuned Falcon-1B

- Designed and fine-tuned a domain-specific AI chatbot using Falcon-1B, leveraging LoRA-based fine-tuning, 4-bit quantization, and Hugging Face Transformers for efficient model adaptation on Azure GPU instances.
- Preprocessed and tokenized a 43,000+ question dataset, applying Named Entity Recognition (NER), stopword removal, text normalization, and retrieval-augmented generation (RAG) to enhance accuracy and factual consistency.
- Deployed an interactive chatbot using Streamlit and FastAPI, ensuring scalability, real-time healthcare Q&A capabilities, while optimizing inference for fast, context-aware responses.

### Image Classification Using Transfer Learning on Tiny ImageNet

- Fine-tuned an EfficientNet-B0 model on the Tiny ImageNet dataset (200 classes) using advanced data augmentation and selective layer freezing on Azure Cloud GPU instances to boost transfer learning performance.
- Optimized the training pipeline with rigorous hyperparameter tuning and robust preprocessing, achieving high accuracy and generalization on a challenging visual dataset.
- Deployed an end-to-end application integrating FastAPI for real-time image inference and Streamlit for an interactive front-end that tracks the count of processed images, ensuring scalable and efficient cloud integration.

### Sentiment Analysis on Customer Reviews

- Designed and deployed a real-time sentiment analysis web application using FastAPI and Streamlit, enabling seamless user interaction and efficient text classification.
- Fine-tuned DistilBERT on customer reviews, significantly enhancing model accuracy compared to traditional approaches like Logistic Regression and Random Forest.
- Developed an interactive sentiment trend dashboard using Plotly Dash, visualizing sentiment shifts over time to support data-driven business strategies.