Krishna Vamsi Rokkam

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WORK EXPERIENCE

Microsoft   **Montreal, Canada**
Data Science Intern – Speech   *May 2023 - Jul 2023*
- Collaborated with the Professional Services Enterprise team to engineer a Python-based Regex Data Redaction Tool to safeguard sensitive PII and PCI data. Designed and implemented advanced regex patterns and integrated ML models (decision trees and SVMs), improving pattern recognition accuracy and redaction precision
- Conducted comprehensive unit testing, ensuring robust performance and reducing manual redaction efforts by 50%
- Co-developed an NLU Data Augmentation Tool using GPT-3/4 and Azure AI services to enhance training data generation. Improved model accuracy by 7% through benchmarking and hyperparameter tuning, and boosted project efficiency by 11% using custom evaluation metrics and detailed analysis with the Nuance Mix tool and Power BI

Deloitte   **Hyderabad, India**
Data Science Intern   *Jan 2022 - Aug 2022*
- Worked with the Deloitte Application Studio in Audit & Assurance to develop a Conversational AI bot using Azure LUIS and QnA Maker to handle complex audit user stories. Integrated with Excel data via API, reducing manual search time by 70%
- Implemented Text-to-Speech capabilities for the bot using Azure TTS and Bot Framework services, significantly enhancing user engagement and accessibility by converting text-based responses to natural-sounding speech
- Integrated Azure Cognitive Services using C#, including Azure Text Analytics API for sentiment analysis and key phrase extraction, and utilized the Direct Line Speech channel for seamless speech-to-text and text-to-speech interactions. This improved response accuracy and contextual understanding, increasing user satisfaction by 20%

Technocolabs Softwares Inc   **Remote, India**
Data Science Intern   *May 2021 - Aug 2021*
- Executed data augmentation techniques such as SMOTE and temporal transformations (lag features, rolling statistics) to enhance a Time Series Forecasting project, resulting in a 15% improvement in model accuracy and F1 score. Used Pandas and Scikit-learn for preprocessing and augmentation
- Developed predictive models for forecasting next-second stock price movements using Logistic Regression, SVM variants, and LSTM networks. LSTM outperformed other models with 15% higher accuracy and a 12% reduction in Mean Absolute Error (MAE)
- Utilized Grid Search and Random Search for hyperparameter optimization. Created interactive dashboards and visualizations with Tableau, improving insights communication and increasing decision-making efficiency by 30%

SmartBridge Pvt Ltd   **Hyderabad, India**
Machine Learning Engineer Intern   *May 2020 - Aug 2020*
- Developed a Convolutional Neural Network (CNN) classification model for real-time skin disease detection, integrating OpenCV for efficient image preprocessing and feature extraction. Designed a custom PyTorch pipeline with image augmentation (rotation, scaling), normalization, and histogram equalization, enhancing model generalization and reducing overfitting
- Engineered a CNN architecture using Max-Pooling, Flatten, and Conv2D layers with progressively larger filters to capture multi-scale features. Applied Batch Normalization and Dropout to enhance training stability and prevent overfitting
- Leveraged transfer learning by fine-tuning the ResNet-50 model, reducing training time by 22% and improving accuracy by 4%. Deployed the model using Flask, with RESTful APIs for real-time image analysis and asynchronous processing to manage high user traffic, resulting in a scalable and responsive web application

EDUCATION

Master of Applied Computer Science - *Concordia University, Canada*   *Sep 2022 - April 2024*
B. Tech in Information Technology - *Sreenidhi Institute of Science and Technology, India*   *Aug 2018 - Jul 2022*

TOP SKILLS

- **Programming languages:** C, C#, Python
- **Machine Learning:** PyTorch, Hugging Face, Deep learning, Transformers, LLM Fine Tuning, Keras, TensorFlow, Scikit-learn, SpeechBrain, MLFlow, OpenCV, CUDA
- **Data Visualization & Analysis:** Tableau, Power BI, R-Studio, Matplotlib, Seaborn, Plotly, Pandas, Numpy
- **Big Data & Databases:** SQL, NoSQL (Couchbase, ElasticSearch)
- **Cloud & DevOps:** Azure AI, AWS (Sagemaker), Oracle cloud (OCI), Docker, Kubernetes, CI/CD, gRPC, Git, Flask, Streamlit

PROJECTS

Transformer based TTS System
- Implemented and optimized a Transformer-based TTS model using the LJSpeech dataset and SpeechBrain framework. Enhanced speech synthesis capabilities with scaled positional encodings, teacher forcing, and weighted loss functions, resulting in a Mel Error reduction to 8.27e-02 and a 10% decrease in Stop Error
- Enhanced training efficiency and speech quality by utilizing dynamic batching, the Noam Scheduler, and Optimizer Initialization technique, achieving training speeds up to 2.5 times faster than Tacotron2, while improving long-range dependency handling for more natural speech synthesis

Dialogue Summarization: Fine Tuning LLM using Prompt Engineering and PEFT
- Explored the FLAN-T5 model from Hugging Face for dialogue summarization. Utilized prompt engineering to refine summary quality and experimented with zero/few-shot inference to enhance the model's in-context learning and performance
- Fine-tuned the model with the PEFT method – Low Rank Adaptation. Achieved a substantial reduction in model size while maintaining competitive performance, with a 17.47% improvement in ROUGE-1 and 8.73% in ROUGE-2 scores over human baseline summaries

Automated Retail Product Classification using CNN
- Developed and evaluated CNN architectures (ResNet-18, GoogleNet, AlexNet) for grocery product classification. Tackled challenges such as data imbalance by implementing techniques like class weighting and oversampling, and mitigated vanishing gradients through careful initialization and normalization. Employed grid search for hyperparameter tuning, optimizing learning rates, batch sizes, and dropout rates to enhance model performance
- Applied transfer learning by fine-tuning the ResNet-18 model with pre-trained weights on ImageNet. Achieved an 8% improvement in classification accuracy and performed bias analysis to evaluate model performance across different product categories, uncovering insights into model weaknesses and areas for further refinement

Modeling Wine Quality using Ensemble Modeling Approach
- Applied ensemble methods, including Random Forest, Gradient Boosting, AdaBoost, and XGBoost, to predict wine quality based on chemical properties and expert evaluations. Utilized bagging and boosting techniques to enhance model robustness and accuracy
- Achieved 89% prediction accuracy, with XGBoost outperforming other models. This approach provided a comprehensive and reliable assessment of wine quality, improving evaluation accuracy and analytical insights

CERTIFICATIONS

- Oracle Cloud Infrastructure Generative AI Professional certification – Oracle Cloud
- Machine Learning certification - Stanford University
- AWS Academy- Cloud Foundations course - Amazon
- Programming Data structures and algorithms using Python - IIT Madras

ACHIEVEMENTS

- Full-Time Post Matric Scholarship from the State Government of Telangana for the entire bachelor's degree
- Silver Award at Ennovate - The International Innovation Show, Poland, 2021
- ELITE grade in 'Data Structures and Algorithms using Python' course from IIT Madras
- Bronze Award in Global Assessment of Information Technology, 2021

ACTIVITIES AND SOCIETIES

Volunteer Team Leader, ConUHacks VIII, Concordia University   **Jan 2024**
- Led a team of volunteers, coordinating activities at Quebec's largest hackathon. Demonstrated strong leadership, task assignment, and communication skills
- Fostered a collaborative environment, addressed issues promptly, and ensured a positive experience for participants, sponsors, and executives, contributing to the event's success

The Techvision club – Board Member and Executive   **Aug 2020 – Sep 2022**
- Led the Focus on Research (FOR) initiative, mentoring students in research projects and facilitating publications. Conducted hands-on programming training in C, Python, and R for over 120 students
- Developed the club's inaugural website and organized technical events, including workshops, hackathons, and webinars on AI, Data Science, and Web Development with industry experts

AIESEC in Hyderabad   **Aug 2020 – Jan 2021**
- Contributed to the Outgoing Global Talent Department, specializing in content creation, market research, and partnership development for international internship exchanges
- Collaborated with a global network of young leaders to promote cross-cultural understanding and facilitate international internships