Sreenidhi Iyengar Munimadugu

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Professional Summary

Dedicated and innovative professional with a total of 3 years of industry experience as a Software Development Engineer (SDE) in Machine Learning, Data Science, and Deep Learning, complemented by three years of research experience in the same fields. Demonstrated success in delivering impactful solutions through data analysis, software development, and research, focusing on enhancing efficiency, performance, and user experience. Eager to apply my expertise and diverse background to contribute to the success of a forward-thinking organization.

Education

University of Southern California - Master of Science in Computer Science: 3.5/4 Los Angeles, USA
Coursework: Database Systems, Algorithms, Machine Learning, Applied Natural Language Processing, Data Science *May 2022–Present*

Sri Indu College (SICET) – Bachelor's in Computer Science and Engineering: 8.97/10 Hyderabad, India
Coursework: Probability and Statistics, Data Warehousing and Mining, Data Structures, Cloud Computing *Aug 2016–Sep 2020*

Publications

- Machine learning approach to predict phase and strength of aluminum containing refractory high entropy alloys (under review)
- Artificial Intelligence approach to predict elevated temperature cyclic oxidation of Fe-Cr and Fe-Cr-Ni alloys **(2022)**
- Audio COVID-19 data Analysis employs Sentimental Analysis and Topic Modeling to derive customer insights for an Org **(2021)**
- Comprehensive Research on Diagnosis of Machine Learning Method Prediction of Diabetes Mellitus **(2020)**

Experience

Graduate Student Researcher - Information Sciences Institute USC, Los Angeles Sep 2022–Present

- Actively Conducting research at ISI AI Labs with **Prof. Michael Pazzani**, **Prof. Carl Kesselman**, **Prof. Rostami**, **Dr. Benjamin Yixing Xu**, and **Dr. Van Nguyen**, resulting in the development of advanced deep learning systems for image classification that replicate domain expert explanations
- Achieved significant progress in highly sensitive and imbalanced classification use cases (Glaucoma, Melanoma, Computer Vision Problems) using XAI (XRAI, SmoothGrad, Grad-CAM) techniques.
- Tech Stack: Vision, PyTorch, AWS (S3 & EC2), Tensorflow, Saliency, XAI, XRAI, SmoothGrad, Grad-CAM, LIME, Shap

Data Scientist - Tvashtaa Data Solutions, Hyderabad Sep 2020–May 2022

- Led the analysis of multiple production and breakdown parameters, resulting in a 15% improvement in production capacity prediction and ensuring quarterly production targets were met.
- Implemented various time series forecasting techniques (ARIMA, ARIMAX, Prophet, HW) based on parameters such as ACF, PACF, etc., and developed Power BI dashboards for production-related parameters.
- Extracted, merged, and cleaned customer chat transcripts, applying LDA, NMF, and dictionary-based methods for topic modeling, delivering valuable insights and analyses to clients.
- Tech Stack: Time Series Forecasting, Hugging-Face, Spacy, ARIMA, ARIMAX, Prophet, HW, Power BI, LDA, NMF, Python, AWS, MLIR

Python Developer - eWARN SYSTEM, Rourkela Sep 2020–Apr 2021

- Innovatively designed and implemented eWarn voice recognition system, optimizing employee authentication, and reducing login time by 1.5 times compared to the previous system.
- Developed a user-friendly desktop GUI for model retraining and fine-tuning, enabling efficient management of voice data records.
- Tech Stack: Voice Recognition, Neural Speaker Embedding, Python, GUI Development, AWS Neuron, Inferentia

Deep Learning Intern - Tata Consultancy Services (TCS), Hyderabad Feb 2020–Sep 2020

- Enhanced classification model stability and accuracy by 4% through in-depth research and implementation of various GAN topologies (GAN, DCGAN, WGAN, WPGAN) for synthetic image data generation.
- Spearheaded the NLP team in developing a deep learning framework for transcribing, translating, and analyzing sensitive voice call data related to COVID-19 healthcare of TCS employees, automating sentiment analysis report generation and storage, and improving healthcare service efficiency by 11%.
- Tech Stack: GAN, DCGAN, WGAN, WPGAN, Deep Learning, NLP, AWS Neuron, Inferentia, Trainium ML Accelerators

Software Developer Engineer - QuAIT, Hyderabad Dec 2019–Sep 2020

- Enhanced a Faster R-CNN-based deep learning framework for semantic segmentation, object recognition, and extraction, achieving a 97.64% accuracy in human object extraction, an 8% improvement over the existing framework.
- Created a custom object detection API using RESTful web services for seamless integration with client applications, resulting in a 16% increase in project adoption rates.
- Trained 350 students in end-to-end computer vision projects as part of a project-based AI induction internship in Deep Learning, influencing 64% of students (undergrads) to choose Machine Learning as their career path.
- Tech Stack: Faster R-CNN, Deep Learning, Semantic Segmentation, Object Detection, RESTful API, GCP, Computer Vision

Projects

- **Highly Imbalanced Image Classification - ISI, USC**: Under **Prof. Michael Pazzani**supervision, explored and implemented 8+ techniques to address imbalanced classes, successfully building and fine-tuning various CNN (VGG16,19, MBNv2, ICPv3) models to counter low-frequency image classes in the data, achieving a remarkable 98.5% F1 Score on the test set, a 35% increase over baseline models.
- **Student Document Manager and Plagiarism Evaluator:** Developed an innovative solution for estimating document similarity using syntactic and semantic analysis, leveraging NLP techniques like TF-IDF, Word Embeddings, and Transformers (BERT, RoBERTa on Hugging Face) to evaluate similarity in assignment submissions, achieving 76% accuracy and enabling three times faster assignment evaluations.
- **NLP for Enzyme Thermal Stability Prediction:** Currently working on a research paper to predict enzyme thermal stability using Natural Language Processing. Exploring various methods to infer language structures from protein sequences and applying NLP techniques. Employing deep language models such as ULMFiT, BERT (ProteinBert, ALBERT, RoBERTA), and XLNet. Representing our team in an ongoing Kaggle project. Achieved a 60% accuracy when applying ProtBert on mutated sequences.
- **Driver Fatigue Monitoring System:** Implemented a driver fatigue monitoring system in In-Vehicle Infotainment (IVI) systems, which tracks drivers' dynamic movements and detects drowsiness based on the analysis of eyelid blinking and yawning. Obtained an accuracy of around 70%, with further fine-tuning needed for underlighting conditions and other challenging parameters.

Technical Skills

- **ML Frameworks**: Tensorflow, Pytorch, HuggingFace, Spacy, AWS (SageMaker, Rekognition, IAM, S3, MLOps, AI Services, audio, and text data processing), GCP.
- **Data Analysis and Visualization**: ETL, Web scraping, Numpy, Scipy, Pandas, tqdm, Dask, Matplotlib, Plotly, Seaborn, PowerBI
- **Databases and Web Tech.:** MySQL, PostgreSQL, Snowflake, Redis, MongoDB, Streamlit, Flask, Django, JS, REST, HTML, CSS
- **Languages and Tools**: Python, SQL, Java, C++, Git, Github, Docker, Kubernetes, Vim, Eclipse, Jupyter, Jira, Trello

Certifications

- Machine Learning and Deep Learning Specialization by deeplearning.ai
- Neural Networks and Deep Learning by Stanford University
- TensorFlow Developer Certificate by Google Cloud
- Professional Cloud Architect by Google Cloud

Leadership and Awards

- **Associate**: Cultural and Technical Fest
- **Contributor**: Streamlit open-source - community
- **Winner**: Microsoft Udacity Technology Scholarship
- **Management Head**: Campus Placements Department
- **Instructor**: "MISSION CODE" by Govt. of Telangana
- **Certificate of Merit**: ML contest, Aakaar IIT Bombay