Nagasai Vegur

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Profile Summary

I am a **Software Engineer** specializing in deep learning, computer vision, natural language processing, and generative models. I have developed and deployed end-to-end AI solutions, including video analytics for emotion recognition, real-time transcription pipelines, and LLM-powered enterprise applications. With expertise in model optimization, cloud deployment, and seamless system integration, I focus on building innovative, user-centric technology that bridges cutting-edge research with practical applications.

Education

IIITDM Kancheepuram — Chennai, India
Bachelor of Technology in Computer Science — CGPA: 9.02 | *Dec 2020 – May 2024*

Sri Siddaganga PU College — Davanagere, India
Pre-university in Science — Percentage: 98.00% | *Jun 2018 – Mar 2020*

Sri Sai Chaitanya High School — Raichur, India
Secondary School Certificate — Percentage: 96.96% | *Jun 2017 – Apr 2018*

Work Experience

AI and Software Engineer — May 2024 – Present
Meistergen Technologies — *Chennai, India*

- **Vision-Powered Human Sensory Analytics:** Led the development of a video analytics platform for stress, nursing (disgust calculation), and interview analysis, managing end-to-end integration from model development to API, core module, and UI design. Leveraged advanced computer vision techniques (face recognition, head pose estimation, eye gaze detection) and multimodal analysis (facial, speech, and eye-tracking data) to provide real-time, accurate emotional state insights, with 75% team contribution.
- **Scalable AI Processing and Automation:** Implemented automation and scalability features with docker and kubernetes for asynchronous video session processing using calibration techniques for baseline adjustments on key metrics (valence, arousal, stress, pitch, rhythm). Developed visual reporting tools for emotion trend analysis and introduced CI/CD pipelines, boosting productivity by 40%.
- **AI-Enhanced Workspace Application:** Designed and integrated a comprehensive AI-powered workspace application that combines project management, finance, logistics, and communication tools. Leveraged cutting-edge AI technologies like GenAI, OpenAI and Llama2 to enhance the platform's AI capabilities, driving smarter decision-making and improving team collaboration.

Software Engineer Intern — Feb 2023 – May 2024
Meistergen Technologies — *Chennai, India*

- **Real-Time ERT Data Visualization:** Developed a real-time ERT data visualization interface for a sewage system, utilizing custom socket communication protocols and chart development, improving data interpretation efficiency by 30%.
- **Perspective-Based Video Streaming:** Contributed to a character-perspective video streaming platform by developing features enabling content viewing from specific character perspectives, leveraging video streaming protocols and metadata management.
- **Secure File Storage System:** Engineered a secure internal file storage system for employees to securely store, retrieve, and share files, improving privacy compliance and reducing manual file-sharing efforts by 50% for 7–10 employees.

Research and Teaching Assistant — Jun 2023 – Dec 2023
Indian Institute of Information Technology, Design and Manufacturing — *Chennai, India*

- **AI for Medical Imaging:** Conducted research on Convolutional Neural Network models, applying explainable AI techniques to improve COVID classification using X-ray images.
- **Deep Learning and Programming Education:** Assisted in teaching deep learning and C programming, guiding students through complex concepts and lab sessions. Supported the *"Deep Learning for Biometrics Privacy and Security"* workshop and the *"Problem Solving and Programming"* lab, contributing to curriculum planning and assessments.

Publications

Fusion of Traditional and Deep Learning Models for Underwater Image Quality Assessment
Conference Research Paper 2024

- **FTDUIQA:** A hybrid model integrating traditional machine learning and deep learning for underwater image quality assessment.
- Combined CNNIQA, DBCNN, HyperIQA, MSAEQA, and a modified **MAUIQA** to enhance evaluation accuracy.
- Outperformed existing methods on the **UID2021** dataset, demonstrating superior image quality assessment capabilities with a PLCC of 0.8654.

Projects

Burner Hole Detection | *Source Code* Sep 2023

- Developed an image processing pipeline to detect and analyze gas burner holes using **OpenCV** and **Hough Transform**.
- Enhanced visibility through contrast stretching and applied segmentation for precise detection.
- Extracted key measurements including hole count and size distribution, with filtering techniques for improved accuracy.
- Automated **CSV reporting** for efficient data evaluation.

Traffic Analyzer | *Source Code* May 2023

- Developed a deep learning-based system to analyze and predict traffic patterns using historical data.
- Implemented **LSTMs, GRUs, and CNNs** for time-series forecasting to optimize signal timing and enhance route planning.
- Integrated data preprocessing, predictive modeling, and visualization techniques for real-time insights, achieving an RMSE of 0.271.

Emotion Recognition Using ECG | *Source Code* Apr 2023

- Developed a machine learning system for emotion recognition using **ECG signals**, extracting **HRV metrics** (RMSSD, SDNN, NNx, CSI, CVI).
- Implemented and evaluated Decision Tree and Random Forest classifiers to predict emotions such as happiness, anger, and disgust.

Operator I | *Source Code* Mar 2023

- Designed and implemented an API and mobile application for an advanced image processing project.
- Integrated arithmetic operations, **spatial domain transformations**, and **frequency domain filtering** using convolution-based techniques.

Face and Sign Recognition | *Source Code* Dec 2022

- Implemented **PCA** for dimensionality reduction in facial recognition and used **KNN** and **Logistic Regression** models.
- Applied CNNs for traffic sign recognition, trained on the **GTRSB dataset**.
- Utilized OpenCV and PIL for image processing, gaining hands-on experience in real-world data collection and deep learning.

Technical Skills

AI & Data Science: Deep Learning, Computer Vision, NLP, Large Language Models (OpenAI, Llama2), Generative AI
Programming Languages: Python, C++, JavaScript, TypeScript, SQL (MySQL, PostgreSQL)
Frameworks & Libraries: TensorFlow, PyTorch, OpenCV, pandas, NumPy, Scikit-learn
Development Tools: Git, Docker, Kubernetes, Linux, REST APIs
Web Technologies: React, Node.js, Next.js, Flask, FastAPI
Other Technical Areas: Image Processing, Computer Networks

Language Skills

Mother Tongue: Telugu
Other Languages: English - C1 (C1 - Reading and Writing; B2 - Listening and Speaking)