Pokala Mohana Vignesh Kumar

✉ vigneshkumar657@gmail.com | 📱 +91 7981365661 | ⊙ github.com/VickyPkla | 🔗
linkedin.com/in/vignesh-kumar-pokala

Technical Skills

Languages: C++, Python, SQL, JavaScript

Frameworks & Libraries: HuggingFace, Langchain, NLTK, PyTorch, TensorFlow, Scikit-learn, Pandas, Numpy, Keras

Databases & Tools: AWS, MongoDB, MySQL, Git, GitHub, Tableau, MATLAB, LaTeX

Web Technologies: HTML, CSS, Bootstrap, Node.js, Express.js

Technical Achievement: 200+ coding problems solved on LeetCode, focusing on data structures & algorithms.

Areas of Interest: Deep Learning, Machine Learning, Natural Language Processing (NLP), Large Language Models (LLMs), Data Science, Image Processing

Experience

ViSAL Lab - Research Intern   May 2024 - July 2024
IIT Tirupati

- Developed a **Denoising Diffusion Probabilistic Model** based on U-Net architecture, tailored for fringe images in **Fringe Projection Profilometry (FPP)**, integrating residual and attention blocks to improve feature representation and focus on relevant regions.
- Outperformed traditional methods with a Peak Signal to Noise Ratio (PSNR) improvement of 19% over WFTP and 25% over BM3D, and achieved a Structural Similarity Index Measure (SSIM) score of 99% — 12% and 9% higher than BM3D and WFTP, respectively.
- Demonstrated superior performance over DCNN, using 65% fewer parameters, attributed to enhanced information flow through residual connections.
- **Technologies used:** Pytorch

Project Work

High-Resolution Sinogram Reconstruction   In Progress

- Developing methods to generate high-resolution sinogram images from low-dose, sparse projection data, aiming to reduce patient radiation exposure
- Implementing advanced reconstruction algorithms to ensure diagnostic accuracy while maintaining lower radiation doses
- Pioneering a novel diffusion-based framework that integrates Poisson noise modeling, particularly relevant for medical imaging where Poisson noise dominates.

Bank Fraud Detection   July 2024

- Architected a hybrid model combining Artificial Neural Networks (ANN) and Self-Organizing Maps (SOM), achieving 90% accuracy in fraud prediction on financial transaction datasets
- Implemented the model to analyze credit card transactions, detecting anomalies and uncovering patterns indicative of fraudulent activity.
- **Technologies used:** Pandas, Numpy, Scikit-learn

Movie Recommender System using Autoencoder   June 2024

- Engineered a deep learning-based recommender system using Autoencoder architecture, achieving prediction accuracy within 0.9 stars on a 5-star rating scale
- Optimized model architecture to handle sparse user-movie interaction matrices, enabling efficient processing of large-scale recommendation tasks
- **Technologies used:** Pytorch, Pandas, Numpy

CampVista - Web Application for Campground Management   Dec 2023

- Designed a full-stack web application with CRUD functionality for comprehensive campground management
- Implemented robust user authentication and authorization systems using Passport.js.
- Designed and integrated an interactive review system with real-time updates, enhancing user engagement and community feedback
- **Technologies used:** Javascript, CSS, HTML, Node.js, Express.js, MongoDB

Education

IIT Tirupati 2025
B.Tech in Electrical Engineering *CGPA: 7.97/10*

Senior Secondary Education 2020
Pon Vidyashram, Chennai *95.4%*

Positions of Responsibility

Manager of Public Relations (PR) & Outreach - Entrepreneurship Cell July 2024 - Present

- Led efforts to build connections with industry leaders, enhancing community engagement and promoting events to boost visibility and participation.
- Collaborated with other colleges to expand networks and establish strong inter-collegiate relationships.
- Negotiated sponsorships through strategic proposals and coordinated with key stakeholders to organize impactful sessions.

Core Member - Academic Affairs Council July 2024 - Present

- Contributed to recommending strategic improvements to academic policies, aimed at optimizing student engagement and enhancing educational effectiveness.
- Collaborated with faculty on curriculum development, ensuring course content aligns with current industry trends and skill demands.

Core Member - Cultural Committee July 2023 - Apr 2024

- Orchestrated and managed diverse cultural events, attracting over 500+ attendees and increased participation significantly through various people engagement initiatives.
- Coordinated art workshops, festival celebrations, and other events, contributing to enhanced student involvement and campus culture
- Oversaw a budget of over 1 lakh, ensuring efficient allocation of resources.

Core Member - Sponsorship Committee, Tirutsava '23 Dec 2022 - April 2023

- Negotiated sponsorships with 40+ brands and companies, securing over 3 lakh in funding to support Techno - Cultural fest activities.
- Supervised the setup of 13 food stalls on campus, ensuring smooth operations and an enhanced event experience.

Certifications

- **Data Structures & Algorithms Essentials Using C++** - Udemy
- **Deep Learning A-Z** - Udemy
- **The Web Developer Bootcamp** - Udemy

Extra Curricular Activities

- **All India Inter IIT Cultural Meet 6.0 at IIT Kharagpur**
  - 3rd position in Charcoal Art competition
- **Intra IIT Competitions**
  - Member of the College Football team (2023)
  - 2nd place & 3rd place in Live Sketching competition (2023) and (2024) respectively
  - 1st place in Charcoal Art competition (2021)
- **1400+ rated chess player on Lichess.**