Peddapothula YASWANTH PAVAN

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About Me

I am Yaswanth, a dedicated Master's student specializing in Signal Processing and Machine Learning at IIT Kharagpur. My passion lies in the realm of Machine Learning and Deep Learning, with a particular focus on Computer Vision and Medical Imaging.

FIELDS OF INTEREST

- Computer Vision
- Deep Learning
- Image Processing
- Machine Learning
- Medical Imaging
- Traffic Surveillance

EDUCATION

Year	Degree	Institute	CGPA/Marks
2024	M.Tech in SPML	IIT Kharagpur	8.16*
2016	B.E in EEE	M.V.S.R.E.C-Hyderabad	78.4/100
2012	Intermediate	Narayana Junior College-Pulivendula	95.7/100
2010	SSC	Nagarjuna High School-Pulivendula	88.83/100

MASTERS THESIS

CLASSIFICATION OF VEHICULAR MOTION TRAJECTORIES IN A TRAFFIC VIDEO   *Ongoing*

- Segmentation, detection, and tracking. Estimation of motion trajectories: Polynomial regression fitting.
- Trajectory classification: Normal vs Abnormal. Sequential learning: LSTM, Vision Transformers.

COURSEWORK PROJECTS

UNSUPERVISED CLASSIFICATION OF PHONOCARDIOGRAM (PCG)   *2022*

- Feature extraction: Shannon Energy. Classification: K-Means clustering

LOSSY, LOSSLESS DATA COMPRESSION AND MUSIC CLASSIFICATION   *2023*

- Lossy Compression: PCA and SVD. Classification: Bayesian Classifier

ADAPTIVE PROBABILITY FILTER FOR REMOVING SALT AND PEPPER NOISES IN AN IMAGE   *2022*

- Noise-free intensity distribution: Median Filter

WIENER FILTER DESIGN AND CONVERGENCE ANALYSIS FOR ENHANCED SIGNAL PROCESSING   *2023*

- Signal Denoising: FIR Wiener Filter. Convergence: Steepest Gradient Descent Algorithm

B.TECH THESIS

BIDIRECTIONAL DC TO DC CONVERTER USING MATLAB SIMULINK   *2016*

- Designing and tuning Bidirectional Dc-DC converter

SKILLS

PROGRAMMING LANGUAGES: *Experienced:* Python | Matlab *Familiar:* C | C++
SOFTWARES AND TOOLS: Jupyter | Google Colab | LaTeX | MS Word | MS PowerPoint
FRAMEWORKS & LIBRARIES: OpenCV | Matplotlib | Numpy | Pandas | Scikit-learn | PyTorch | Tensorflow
DEEP LEARNING ARCHITECTURES: DNN | CNN | Sequential Networks | Transformers | GANs | Autoencoder
COMPUTER VISION: Object Detection | Object Tracking | Depth Estimation
IMAGE PROCESSING: Segmentation | Classification | Histogram Equalization | Image Transformations

CERTIFICATIONS

- AI for Breast Cancer Detection - Authorized by Johns Hopkins University and offered through Coursera
- LaTeX for Technical Writing and Beamer Presentation - IEEE Young Professionals Affinity Group Kharagpur Section

Work Experience

Panchayat Secretary Grade VI

• **Department:** Panchayat Raj and Rural Development at Andhra Pradesh state government.

• **Duration:** 21 months

Coursework Information

- Deep Learning Foundations and Applications
- Machine Learning for Signal Processing
- Digital Image Processing
- Probability and Random Processes for Signals and Systems
- Linear Algebra in Signals and Systems
- Geometric Methods for Computer Vision
- Convex Optimization in Signal Processing
- Medical Image Processing

Awards and Achievements

- Secured **98.81** percentile in **GATE 2022 EE** paper.
- Offered the post of EET 2022 (Electrical) at **NTPC** through GATE score.

Positions of Responsibility

- Teaching Assistant for Digital Signal Processing Lab.

Extra Curricular Activities

- **Volunteering:** Received Best Seva Puraskar-2020 from the Kadapa Association for Service Societies for service during COVID-19.

Hobbies

- **Cooking:** Interested in experimenting with new recipes and cuisines.
- **Cricket:** Enthusiastic cricketer with a commitment to teamwork and sportsmanship.

Master Thesis Description

In this thesis, I focused on the intricate classification of vehicle motion trajectories. Leveraging Recurrent Neural Networks, particularly Long Short-Term Memory (LSTM), I aim to classify abnormal traffic patterns from individual vehicle trajectories. The ultimate goal is to detect abnormal traffic behavior, such as potential violations, at an early stage, fostering communication of traffic concerns among neighboring vehicles. In the initial phase, I developed an automated framework for estimating actual vehicle trajectory paths in traffic videos, utilizing Yolov8 for enhanced vehicle detection. Looking ahead, my research will delve into the potential of RNN networks with trajectory information, incorporating deep-learning Vision-Transformers to automatically categorize trajectories into legitimate traffic paths and identify potential traffic violations. **GitHub:** https://github.com/yaswanth0209/Classification-of-vehicular-motion-trajectories-in-a-traffic-video