Dipan Mazumder

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Summary

3rd-year Information Technology student specializing in AI/ML and computer vision with experience building production-ready systems. Developed SARATHI (real-time driver monitoring) and Vrinda (AI-powered plant disease detection) using TensorFlow, PyTorch, OpenCV, and MediaPipe, optimized for edge deployment on Raspberry Pi. Winner of SIH Internal Hackathon leading Team 'Dot Slash' among 150+ participants, with strong full-stack development skills and focus on deploying ML solutions that solve real-world problems.

Education

Bachelor of Technology in Information Technology   08/2023 – 07/2027
Techno International New Town (TINT), New Town, West Bengal

Technical Skills

- **Programming Languages:** Python (v3.10), Java (v17), C
- **AI-Machine Learning & Computer Vision:** TensorFlow (v2.15), Keras (v2.13), PyTorch (v2.2), Deep Learning, OpenCV (v4.8), CNN, GANs, RNN, YOLO (v8), Phasenet, UNet, VGG19, MLOps, Image Processing
- **Frameworks & Libraries:** Mediapipe (v0.10), Flask (v2.3), Django (v4.2), Streamlit, Leaflet.js, Bootstrap (v5), REST APIs, TensorFlow Lite, Hugging Face, SeismoBench
- **Web Technologies:** HTML5, CSS3, JavaScript (ES6+)
- **Databases:** SQL, SQLite (v3), MongoDB (v6)
- **Tools & Platforms:** Git, GitHub, Postman (v10), VS Code, Google Colab, Kaggle, Docker (v24), Conda, Raspberry Pi
- **Data Science & Analytics:** Matplotlib (v3.8), Pillow (v10), Pandas (v2.2), NumPy (v1.26), Data Visualization

Soft Skills

Leadership, Communication, Team Collaboration, Time Management, Problem Solving, Creative thinking, Curiosity

Projects

Sarathi – AI-powered driver attention monitoring system | Sarathi

Technologies: Python, OpenCV, MediaPipe, Streamlit, Computer Vision, Real-Time Processing

- Built a real-time driver attention monitoring system operating at 30+ FPS with <100 ms latency, using dual-layer MediaPipe Face + Pose detection for high-precision fatigue, distraction, and posture analysis (±5° head-pose error, ~95% landmark visibility)
- Designed a CPU-efficient alert mechanism featuring 1.2s fatigue trigger window, <8% false-positive rate, multi-angle posture deviation detection, and automatic screenshot logging—fully optimized for Raspberry Pi-class hardware.
- Demonstrated live at Hack4Bengal 4.0, validating its capability to reduce fatigue-driven accidents (84% of road fatalities) through real-time multi-view monitoring and rapid audio-visual warnings.

Vrinda – AI-powered plant health solution | Vrinda

Technologies: Node.js, TensorFlow, MongoDB, Express.js, Computer Vision, Cloudinary

- Built an AI-powered plant disease detection system achieving 94-96% multi-class accuracy across 15+ crop disease categories using TensorFlow CNNs trained on diverse, real-world agricultural datasets.
- Built a full-stack web platform featuring a community forum, fertilizer calculator, weather integration, real-time plant health analytics for farmers.
- Achieved global recognition at Hack This Fall 2024, receiving live YouTube appreciation among thousands of submissions.

PoseEstimation – real-time body tracking system | Poseestimation

Technologies: Python, OpenCV, MediaPipe, Computer Vision

- Developed a real-time human pose detection system achieving 30+ FPS, <33ms latency, 0.5+ confidence thresholds, ~93% PCK@0.1 accuracy, using MediaPipe Pose.
- Enabled applications in expression detection, posture monitoring, and AR/VR body tracking.
- Supports video capture and processing for fitness, sports analytics, and healthcare monitoring applications.

Earthquake prediction using Deep Learning – seismic event detection system | Earthquake-Prediction

Technologies: Python, Pytorch, SeismoBench, Obspy, Deep Learning, Computer Vision

- Designed a real-time earthquake phase detection system using PhaseNet, selected for its superior time-frequency feature extraction and proven performance over STA/LTA and basic CNN/RNN models, achieving ~97% P/S wave accuracy on the 22GB ETHZ dataset
- Enhanced model reliability through probabilistic Gaussian labeling (σ=30), heavy data augmentation, and GPU-optimized training, resulting in a 95.5% loss reduction.
- Integrated live seismic-stream support using ObsPy, enabling continuous monitoring, rapid event detection, and deployment-ready scalability for disaster response and geophysical research

Experience

Machine Learning Intern | Prodigy Infotech | Feb 2024 – March 2024

- Developed customer segmentation model using K-Means Clustering to identify target customer groups for business strategy optimization. Customer Segmentation
- Built a house price prediction system using Linear Regression, achieving an 88% improvement in prediction accuracy via feature engineering and hyperparameter tuning. House Price Prediction

Certifications

NPTEL: Machine Learning using Python Certificate | **Google:** Data Analytics Capstone Certificate | **IBM:** Generative AI Applications Certificate

Achievements

Winner – SIH internal hackathon among 150+ participants | **Finalist** – Hack4Bengal 4.0 (7,500+ participants) |
Finalist – India Today Technovat challenge | **Global Recognition** – Hack This Fall Ai Project track

Extracurricular Activities

- Organized Prabuddha 2025, the annual tech fest of Techno International New Town.
- Volunteered at the 3rd International Conference on Data Analytics and Insights (ICDAI 2025).
- Secured 2nd position in skit competitions and quiz master in a quiz competition in college