Ajjay Adhithya V

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Education

Vellore Institute of Technology Chennai, India
Bachelor of Technology in Computer Science and Engineering; ***CGPA: 9.02/10*** *2022 – 2026*

Experience

Centre for Cyber Physical Systems (CCPS), VIT Chennai May 2025 – Aug 2025
Summer Research Intern *Chennai, India*

- Conducted research on "Trade-Offs in AI-Text Detection," performing a comparative study of lightweight Transformer models including DistilBERT, ALBERT, and TinyBERT.
- Designed and implemented experiments to evaluate efficiency vs. performance trade-offs in detecting AI-generated text.
- Analyzed experimental data with faculty mentors, resulted in an IEEE conference publication (ICSCN 2025).

InstiBuzz - Campus Brand of IIT Madras Aug 2024 – Oct 2024
Technical Team Intern - Full Stack *Chennai, India*

- Contributed to the maintenance and optimization of the company website, ensuring smooth performance and scalability.
- Enhanced User Experience (UX) by implementing responsive design improvements and interactive features.
- Collaborated with the technical team to execute bug fixes, feature updates, and performance tuning.

Publications

LoRaWAN-Based Blood Sugar Monitoring to Enhance Diabetes Management in Rural Areas
Published in IEEE CICT 2025 | DOI: 10.1109/CICT67193.2025.11399013

Trade-Offs in AI-Text Detection: A Comparative Study of DistilBERT, ALBERT, and TinyBERT
Published in IEEE ICSCN 2025 | DOI: 10.1109/ICSCN67106.2025.11308419

Transforming Road Infrastructure Management: A Multimodal Road Quality Rating System
Published in IEEE ICCMC 2025 | DOI: 10.1109/ICCMC65190.2025.11140874

Projects

Automated Disaster Damage Assessment | *Deep Learning, PyTorch, U-Net, ResNet-34* Aug 2025 – Nov 2025

- Developed a unified deep learning model (U-Net with ResNet-34 encoder) for simultaneous building localization and multi-class damage classification from satellite imagery.
- Innovated a custom "CombinedLoss" function with masking to focus classification loss solely on relevant building pixels, significantly improving training efficiency.
- Achieved high quantitative performance with 0.9726 pixel accuracy in clear-sky scenarios, proving viability as a scalable alternative to inefficient two-stage systems.

Adaptive Traffic Signal Optimization | *Reinforcement Learning, Python, AI* Sep 2024 – Nov 2024

- Designed an AI-based traffic management system utilizing Reinforcement Learning (RL) algorithms for adaptive signal control.
- Incorporated predictive modeling to dynamically optimize signal timings, reducing congestion and average waiting times.
- Simulated complex urban traffic flow scenarios to validate efficiency improvements in throughput and delay reduction.

Technical Skills

Machine Learning & AI: Deep Learning, Computer Vision, Natural Language Processing, Reinforcement Learning, Model Optimization, Transfer Learning

Frameworks & Libraries: PyTorch, TensorFlow, Scikit-learn, Hugging Face Transformers, NumPy, Pandas, OpenCV

Programming: Python (Primary), C/C++, Java, SQL, JavaScript

Web Development: React.js, Node.js, Express.js, HTML/CSS

Tools & Platforms: Linux, Git, GitHub, AWS, Docker