VEDANG AVAGHADE

📞 +1(623)-275-1664 ✉ vedangavaghade01@gmail.com in LinkedIn 🌐 Portfolio

EDUCATION

Arizona State University | Tempe, AZ   **Aug 2025 – Present**
Master of Science in Computer Science
- **Relevant Coursework:** Natural Language Processing, Agentic AI, Foundations of Algorithms, Mobile Computing, Statistical Machine Learning, Data Processing at Scale, Information Assurance

MIT World Peace University | Pune, India   **Jul 2019 – Jun 2023**
Bachelor of Technology in Computer Science
- **Relevant Coursework:** Object Oriented Programming, Data Structures, Operating Systems, Database Management Systems, Artificial Intelligence, Machine Learning, Deep Learning, IoT

WORK EXPERIENCE

Project Engineer | C-DAC, Pune, India   **Nov 2024 – Jul 2025**
- Orchestrated the engineering of cross-platform mobile applications (Flutter, Ionic) with MVC architecture and responsive UI, deployed on Android, iOS, and Web, achieving a user base of over 1.5 lakh users.
- Spearheaded the launch of 'Quality First' (PMGSY) and 'Meri Sadak' portals, integrating GPS, REST APIs, multimedia capture, and dashboards to enable monitoring of 98,500 km of rural roads.
- Streamlined .NET Core APIs and optimized MySQL queries for national-scale road datasets, implementing JWT authentication, offline-first synchronization, and async data pipelines.

Software Engineer | Jombay, Pune, India   **Oct 2023 – Apr 2024**
- Architected a mass mailing platform (Ruby on Rails, AWS, Docker) that automated 100,000+ monthly messages, reducing manual work by 75% while integrating WhatsApp and email APIs.
- Directed the optimization of Flutter/Dart mobile workflows, embedding ffmpeg-based video compression to cut file sizes 50% and increase upload success rates by 40%.

Student Intern | C-DAC, Pune, India   **Jun 2022 – Feb 2023**
- Led the implementation of a U-Net based road extraction model (TensorFlow, HPC GPUs) achieving 96% accuracy, directly supporting urban planning initiatives in 10+ smart city projects.
- Developed a comprehensive web platform (Angular, Spring Boot, Flask) integrating ML models for real-time traffic predictions, enabling comparative performance analysis across algorithms.

PROJECTS

Qwen2.5-0.5B Fine-Tuning via RLAIF | *Python, PPO, LoRA* | GitHub
- Pioneered a "Nano-scale" alignment pipeline for Qwen2.5-0.5B using Heuristic RLAIF (Reinforcement Learning using AI Feedback) and RLVR (Reinforcement Learning using Verifiable Rewards), replacing massive 70B+ judge models with a custom programmatic reward function.
- Achieved 43.75% accuracy on GSM8K with 98% strict format adherence by implementing a hybrid reward system and optimizing training on an offline cluster using LoRA.

Connector-Aware LLM Pretraining | *Python, PyTorch, Llama 3.2* | GitHub
- Devised a "Connector Embedding Amplification" mechanism for Llama 3.2 3B to address gradient starvation, identifying 150+ discourse markers and applying a 1.1x scalar boost to prioritize logical structure learning.
- Validated architecture on 64K documents, confirming stable signal propagation and achieving a theoretical 10% acceleration in gradient updates for reasoning tokens.

Road Extraction from Satellite Images | *Deep Learning, Python* | GitHub
- Designed deep learning pipeline for automated road detection, reaching 96% accuracy, reducing manual mapping time by 70%, and enhancing planning across 50+ districts.
- Accelerated model training on HPC with GPUs, slashing runtime from 12 to 3 hours while applying segmentation, feature extraction, and semantic analysis in Python.

TECHNICAL SKILLS

Languages & Databases: Python, JavaScript, C, C++, Ruby, Dart, SQL (MySQL, PostgreSQL), MongoDB, HTML, CSS
Core Concepts: Data Structures, Algorithms, Operating Systems, REST APIs, Microservices, Agile Development
AI/ML Tools: LLMs, Transformers, Hugging Face, NLP, PyTorch, TensorFlow, Keras, Scikit-learn, CNN, ResNet, U-Net
Web, Mobile & Cloud: Flask, Node.js, React.js, Angular, Ruby on Rails, Flutter, Ionic, AWS (EC2, S3), Docker, Git, CI/CD
Certifications: Operating Systems, Python, Ruby on Rails, C++, C