

# VEDANG AVAGHADE

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## Education

### Arizona State University, Tempe, United States

Aug 2025 - May 2027

Master of Science - Computer Science

GPA: 3.0/4.0

- Relevant Coursework: Topics in Natural Language Processing, Agentic AI, Foundations of Algorithms, Mobile Computing, Cloud Computing, Statistical Machine Learning, Data Processing at Scale, Information Assurance and Security

### MIT World Peace University, Pune, India

Jul 2019 - Jun 2023

Bachelor of Technology - Computer Science and Engineering

CGPA: 8.40/10

- Relevant Coursework: Object Oriented Programming, Data Structures, Operating Systems, Database Management Systems, Artificial Intelligence, Machine Learning, Deep Learning, Internet of Things

## Work Experience

### Project Engineer | C-DAC, Pune, India

Nov 2024 - Jul 2025

- Engineered cross-platform mobile applications (Flutter, Ionic) with MVC architecture, reusable state management, and responsive UI, deployed on Android, iOS, and Web, achieving a user base of over 1.5 lakh users.
- Spearheaded launch of 'Quality First' (PMGSY) and 'Meri Sadak' portals, integrating GPS, REST APIs, multimedia capture, complaint workflows, and dashboards, enabling inspection and monitoring of 98,500 km of rural roads and improving transparency and accountability.
- Streamlined .NET Core APIs and optimized MySQL queries for national-scale road datasets, implementing JWT authentication, offline-first synchronization, and async data pipelines to ensure reliability in low-connectivity regions.

### 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.
- Collaborated on Flutter/Dart mobile app development, 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

- Implemented U-Net based road extraction model (TensorFlow, HPC GPUs) achieving 96% accuracy, directly supporting urban planning initiatives in 10+ smart city projects.
- Created a web platform (Angular, Spring Boot, Flask) integrating ML models for real-time traffic predictions, enabling comparative performance analysis across algorithms.
- Enhanced live traffic forecasting pipelines, producing congestion treatment recommendations that improved flow efficiency by 30%.

## Projects

### Connector-Aware LLM Pretraining | Python, PyTorch, Llama 3.2 | [Link](#)

- Engineered 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 the architecture on 64K scientific documents, confirming stable signal propagation via custom residual highways and achieving a theoretical 10% acceleration in gradient updates for reasoning tokens.

### Road Extraction from Satellite Images using DNN | [Link](#)

- 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

**Programming & Scripting Languages:** Python, JavaScript, C, C++, Ruby, Dart, SQL (MySQL, PostgreSQL), MongoDB, HTML, CSS. Data Structures, Algorithms, Operating Systems

**AI Tools & Frameworks:** Large Language Models (LLMs), Transformers, Hugging Face, NLP, PyTorch, TensorFlow, Keras, Scikit-learn, CNN, ResNet, U-Net, Random Forest, Linear Regression, SVM

**Web/Mobile & Cloud Frameworks:** Flask, Node.js, React.js, Angular, Agile Development, Ruby on Rails, Flutter, Ionic, AWS (EC2, S3), Docker, Git, Postman, CI/CD, REST APIs, Microservices

**Certifications:** Operating Systems, Python, Ruby on Rails, C++, C