

Varun Kamath

Bachelor of Technology
Vellore Institute of Technology

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PROFESSIONAL SUMMARY

AI Engineer with proven expertise in computer vision, NLP, and deep learning, specializing in designing production-ready AI solutions. Demonstrated success in leading technical teams and creating high-accuracy models for automotive damage detection, market prediction, and medical image segmentation. Seeking a challenging role to leverage advanced AI and Machine Learning skills to drive innovation and deliver business impact.

EDUCATION

• **B.Tech in Computer Science and Engineering (AI and Machine Learning)** *Sep 2020 - Jul 2024*
Vellore Institute of Technology, Chennai CGPA: 9.1

TECHNICAL SKILLS AND INTERESTS

Programming Languages: Python
Machine Learning & AI: TensorFlow, Keras, PyTorch, Scikit-Learn, YOLO, Large Language Models (LLM)
Computer Vision: OpenCV, Ultralytics, Image Segmentation, Object Detection
Natural Language Processing: RAG, LLMs, Sentence-Transformers, RASA, GPT, Sentiment Analysis
Data Engineering: Pandas, NumPy, Matplotlib, Seaborn, GeoPandas
Development Tools: Git, Selenium, BeautifulSoup, AWS, Label Studio, CVAT
Relevant Coursework: Natural Language Processing, Video Analytics, Deep Learning, Foundations of AI, Machine Learning Fundamentals, Data Structures & Algorithms, Database Management System, Object Oriented Programming
Areas of Interest: Computer Vision, Natural Language Processing, GenAI
Soft Skills: Critical Analysis, Team Leadership, Project Management, Innovation, Logical Reasoning, Adaptability, Self-learning

PROFESSIONAL EXPERIENCE

- **Sphere Soft Solutions** *Remote Work*
AI Engineer Jul 2024 - Present
- Built a multi-agent AI system using local LLaVA models to autonomously track vehicles across 4 camera zones, correlating VIN scans with real-time traffic movement data with sub-2-second latency.
 - Built a full-stack RAG chatbot with role-based access control integrating LLaMA LLM for natural language generation, web scraping via Selenium, FAISS vector embeddings for retrieval, and FastAPI/Streamlit architecture for intelligent website Q&A.
 - Engineered three separate AI pipelines for vehicle damage detection, area/part segmentation, and severity detection, achieving 20% higher accuracy within the first two months, accelerating progress equivalent to a year.
 - Architected a comprehensive data scraping system using Selenium Web Drivers and BeautifulSoup to automate extraction of training data from open source locations, improving data acquisition efficiency by 40%.
 - Led a cross-functional team of 10 interns and 5 international damage specialists in New Boston for parallel task execution and collaborated with a team of 4 offshore experts to gather high-quality car damage data, enhancing training efficiency and model precision.
 - Integrated computer vision pipelines using YOLO, reducing insurance claim processing time by approximately 40% and improving object detection accuracy by 22%.
- **Anyo App** *Chennai, Tamil Nadu*
AI Research Intern Mar 2023 - May 2023
- Designed and trained a mental health chatbot using RASA, JMeter, and AWS, resulting in a 30% increase in user satisfaction and a 20% reduction in operational costs.
- **Orgware Technologies** *Chennai, Tamil Nadu*
AI/ML Intern Nov 2022 - Feb 2023
- Created an NLP system using LLMs for military surveillance drones, enabling real-time alert generation with over 80% accuracy during test deployments.
- **Farmwise AI** *Chennai, Tamil Nadu*
Machine Learning Intern Aug 2022 - Oct 2022
- Conducted in-depth performance analysis of polygon matching algorithms for Indian farmlands using satellite imagery.
 - Applied specialized libraries including GeoPandas and ORB to improve accuracy from 67% to 93%, significantly enhancing land boundary identification.

RESEARCH AND PROJECTS

•Gastrointestinal Tract Image Segmentation using Deep Learning Frameworks

Feb 2024 - May 2024

IEEE Xplore published research presented at ACCAI 2024 conference

- Built and evaluated advanced deep learning models for gastrointestinal endoscopy image segmentation using the Kvasir-seg dataset, achieving 99.17% accuracy and 0.95 IoU.

•Efficient Market Predictions Using AI

Nov 2023 - Feb 2024

Final year capstone project

- Formulated a hybrid stock market prediction system combining regression analysis with NLP sentiment analysis of financial news data.
- Achieved an initial R^2 score of 0.976 in predicting stock movements, which improved to 0.997 after incorporating advanced algorithms and feature engineering techniques.

•AI-based Team Builder

Aug 2023 - Oct 2023

Research project accepted at IRCTAC 2023 conference

- Crafted innovative AI algorithms to analyze over 500 users' personality traits and deployed clustering techniques to form optimized teams.
- Research published in IEEE Xplore with DOI: <https://ieeexplore.ieee.org/document/10480783>

•Cognitiselements: A Smart Marketing Platform

Jan 2023 - May 2023

AI platform for entrepreneurs to analyze market trends

- Designed an advanced predictive model utilizing NLP for aspiring entrepreneurs, delivering 92.6% accuracy in forecasting market performance based on real-time trends and competitor analysis.

ROLES OF LEADERSHIP

•Vice PresidentData Science Club - VIT, Chennai

July 2022 - Jun 2023

- Organized and hosted a hackathon during VIT's Techfest with over 500 participants.
- Conducted 2 workshops on Advanced Machine Learning and an AI expo.

•Capstone MentorDeakin University, Australia

March 2022 - Jun 2022

- Mentored a team of 4 graduate students for their capstone project on malware detection.
- Facilitated weekly progress reviews and offered technical expertise.

CERTIFICATIONS

Python for Data Science and Machine Learning (Udemy)

Building a Facial Recognition Application Using Python (Guvi Code Camp SRM)

Intro to Machine Learning (Kaggle)

Deep Generative Modelling for Images (VIT)

Introduction to Programming Using Python (IIT Bombay)

Introduction to Programming Using C++ (IIT Bombay)