Varun Raghuraj Rana

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EXPERIENCE

SETV Global **Vadodara**

AI/ML Intern *4th Aug 2025 – Present*

- *Designed and trained multiple computer vision and deep learning models (YOLO11, ConvNeXt, custom classifiers) across gastrointestinal, oncology, neurology, and musculoskeletal use cases, executing large-scale RCTs and achieving consistent performance gains, including accuracies above 88% in production-ready evaluations.*
- *Built end-to-end ML pipelines covering data mining, annotation, class balancing, EDA, hyperparameter tuning, training, testing, and SETV-format RCT reporting; standardized workflows reduced rework cycles and improved model iteration speed by approximately 25%.*
- *Developed and integrated clinical AI applications using Flask and Gradio, enabling image/video inference, automated PDF report generation, historical correlation, and progression analysis; collaborated with engineering and clinical teams to ensure robust deployment, error handling, and compliance with diagnostic reporting standards.*
- *Designed data ingestion workflows using Azure Blob Storage and MongoDB for scalable storage and retrieval of medical imaging datasets, and implemented metadata driven tracking using temporary and permanent identifiers for longitudinal analysis and business analytics.*

Adani Hazira Port Limited (AHPL) **Surat**

Intern *6th June 2024 – 10th July 2024*

- *Gained comprehensive knowledge of cargo documentation procedures from CDU department, supporting compliance with industry standards while processing over 200 shipping documents per month, ensuring error rates.*
- *Monitored and controlled tanker loading and unloading processes at TLF/TULF facilities using SCADA systems, achieving a 95% accuracy rate in cargo documentation and enhancing operational efficiency.*
- *Managed port side operations by coordinating the transfer of liquid cargo from vessels to tank farms, facilitating the safe handling of over 500 million liters.*

PROJECT EXPERIENCE/FREELANCE

Disease Detection Model: **[LINK]**

- **Description**: *Developed an object detection model to identify stomach ulcers and polyps in endoscopic images, with subclass detection for different ulcer types.*
- **Tools Used**: *Python, YOLO11l, OpenCV, Pandas, Seaborn, Matplotlib*
- **Accuracy**: *Achieved a mean Average Precision (mAP) of 0.90 across classes and subclasses.*
- **Highlight**: *Implemented YOLO-based detection pipeline capable of both class-level (ulcer vs. polyp) and subclass-level (ulcer types) recognition. Conducted EDA to study lesion distribution, applied augmentation techniques to improve robustness, and visualized bounding box predictions for clinical interpretability.*

Tree Sight Forest Detector: **[LINK]**

- **Description**: *Built a computer vision model to detect and classify trees from aerial and satellite imagery for forest monitoring.*
- **Tools Used**: *Python, TensorFlow/Keras, OpenCV, Matplotlib, Seaborn*
- **Accuracy**: *Achieved a mean Average Precision (mAP) of 0.89 on the validation set.*
- **Highlight**: *Performed data preprocessing and augmentation to handle class imbalance, implemented a CNN-based object detection pipeline, and visualized detection results with bounding boxes for clear interpretation.*

X – Ray Image & Report Generation (Chest): **[LINK]**

- **Description**: *Developed a hybrid deep learning model to generate synthetic X-ray images and corresponding medical reports.*
- **Tools Used**: *Python, TensorFlow/Keras, NLP (Transformers), NumPy, Matplotlib*
- **Accuracy**: *Achieved high structural similarity (SSIM) for generated X-rays and BLEU score of 0.87 for report generation.*
- **Highlight**: *Combined Generative Adversarial Networks (GANs) for realistic image synthesis with Natural Language Processing (NLP) models for automated diagnostic report generation. Conducted hyperparameter tuning and presented outputs with visualizations to track training progress.*

Algorithmic Trading Bot and Strategy Engine:

- **Description**: *Developed a hybrid automated trading system for Indian Options and Cryptocurrencies, featuring a FastAPI-based signal server, N8N workflow orchestration, and a custom web dashboard for real-time monitoring.*
- **Tools Used**: *Python (FastAPI, Pandas, NumPy), N8N (Automation), JavaScript, REST APIs, Technical Indicators (RSI, MACD, EMA).*
- **Accuracy:** *Engineered a robust back testing engine with walk – forward validation and realistic cost modelling, optimizing, strategies to achieve 55% win rate and 1.4% profit factor in simulations and real time market condition.*
- **Highlights**: *Designed a "Market Scenario Detector" that synthesizes multiple technical indicators into confidence-weighted trade signals, enabling dynamic leverage adjustment and 24/7 autonomous operation.*

EDUCATION

Parul University — **Vadodara**
B.Tech in Chemical Engineering — *2021 – 2025*

Parul University — **Vadodara**
Diploma in Neural Network and Deep Learning (Distance) — *2023 – 2024*

AMBE VIDYALAYA — **Vadodara**
XII Class/Grade — MAY - 2021

CERTIFICATION

- *Technologies for Clean and Renewable Energy Production* — **IIT Roorkee**
- *Entrepreneurship Essentials* — **IIT Kharagpur**
- *Basic Environment Engineering & Pollution Abatement* — **IIT Roorkee**
- *Essentials of Chemical Process Safety and Industrial Hygiene* — **Parul University**

SKILLS

Language: *Python, JavaScript*
Databases: *MongoDB*
Cloud & Storage: *Azure Services*
Data Analysis: *Pandas, NumPy, EDA, Time-series analysis, Model evaluation metrics and error analysis*
ML/DL: *scikit-learn, TensorFlow, PyTorch, Model training, HPT, Class imbalance handling and performance optimization*
Computer Vision: *YOLO, OpenCV, CNNs, RNNs, GANs*
APIs, Deployment & Automation: *FastAPI, Flask, Gradio, REST APIs, Docker, N8N workflow automation*
Visualization & Reporting: *Matplotlib, Plotly, Tableau, Power BI*
Tools & Platforms: *Jupyter Notebook, VS Code, Antigravity, Kiro*