Veer Ryait

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EDUCATION

University Of Petroleum and Energy Studies

- Bachelor of Technology in Computer Science & Engineering (Honors) Spz. AIML

Monash University

- Masters of Data Science

WORK EXPERIENCE

Energy Mentors & IIT Ropar Partnership (Internship: 2023)

- Developed digital twin simulation of Hybrid Energy System using MATLAB/Simulink; engineered data pipeline generating and processing 10K+ time-series data points (voltage, current, power output, efficiency metrics) across 15+ operating scenarios.
- Conducted statistical analysis through sensitivity testing and parameter sweep optimization on 1000+ simulation runs; identified key efficiency drivers and extracted actionable optimization insights.
- Optimized simulation algorithms achieving 25% accuracy improvement and 20% runtime reduction; developed energy optimization strategies reducing simulated power consumption by 22% while maintaining system stability.
- Documented data-driven findings and presented recommendations to the engineering team, enabling informed decision-making for Hybrid Energy System design.

Here Technologies (Internship: 2023)

- Developed machine learning pipeline using XGBoost to classify geospatial location records with 94% accuracy; improved map coverage accuracy by 25% across EMEA regions through systematic feature engineering and hyperparameter tuning.
- Optimized data pipelines processing location data from multiple sources using Apache Spark and custom ETL frameworks; reduced validation latency by 30% and data quality issues by 25%.
- Built anomaly detection algorithms to identify and flag duplicate locations and inconsistencies across 500K+ records; implemented automated QA ensuring accuracy before production deployment.
- Collaborated with product and engineering teams analyzing location patterns and coverage gaps; contributed data-driven insights informing product decisions for key clients.

Ekant Solutions (Full Time: 2025)

- Contributed to the Game Management System powering the Kho Kho World Cup in India supporting 23 nations, 39 international teams, 615+ players; optimized data pipelines processing 10K+ match records aggregating player performance metrics (win rates, match statistics, team dynamics) enabling real-time tournament analytics.
- Engineered scalable backend architecture for team management module with optimized PostgreSQL schemas and REST APIs managing 39 team rosters, group assignments, and match pairings.
- Designed interactive Power BI dashboards with visualizations displaying player statistics, team rankings, and live tournament standings..
- Implemented data validation and quality assurance frameworks using Python and SQL constraints to ensure accuracy of player records and match data, improving data reliability by 25% across the entire tournament dataset.

TECHNICAL SKILLS

- **Programming:** Python, SQL, R, C++, MATLAB, TypeScript, JavaScript
- **Data Science & ML**: TensorFlow, Keras, PyTorch, Scikit-learn, XGBoost, NumPy, Pandas, Feature Engineering, Statistical Analysis, A/B Testing, Graph Neural Networks
- **Data Visualization & BI:** Power BI, Tableau, Matplotlib, Recharts:
- **Web & Backend**: Next.js, FastAPI, React
- **Databases**: PostgreSQL, Advanced SQL
- **Data Processing**: Scrapy, Selenium, Beautiful Soup, ETL Pipelines
- **Tools**: Docker, GitHub, Jupyter, Vercel, Railway, MongoDB

ACADEMIC/ EXTRA CURRICULAR ACTIVITIES

- **Gold Medal** - IBM 2022 Technical Presentation Competition for best AI/ML project demonstrating innovation in emerging technologies.
- **IIT Cognizant Tech Conference & Exhibition 2022** - Selected presenter showcasing technical work to industry professionals, students, experienced professors, renowned speakers, and eminent personalities.
- **2nd Runner-Up** - Hyper Vision Hackathon: Ranked in top 3 among 100+ teams competing in 24-hour sprint event with real-world problem-solving challenges.
- **Mathematics & Science Excellence** - District-level recognition for academic excellence in quantitative disciplines foundational to data science.
- **Sports & Leadership** - District-level table tennis player and team captain, demonstrating discipline, strategy, and team coordination skills transferable to collaborative technical environments.

PROJECTS

Nexus Risk Platform - Supply Chain Risk Prediction AI (https://nexus-risk-platform-vedq.vercel.app/)

- Developed ensemble ML models (Random Forest + Graph Neural Networks) predicting supply chain disruptions on Taiwan-to-US corridor; optimized GNN with 2-3 convolutional layers and attention mechanisms, achieving 94% accuracy, 92% precision, 89% recall, 90.5% F1-score (23% improvement over baseline).
- Built data pipeline processing 100K+ daily points from 3+ sources (MarineTraffic AIS, OpenWeatherMap, GDELT); engineered 15+ domain features (speed anomalies, weather indices, congestion ratios, sentiment scores); enabled continuous retraining with Pydantic validation and PostgreSQL.
- Engineered GNN analyzing 500+ port nodes for cascading failure detection; addressed data imbalance (10:1 ratio) with SMOTE + class weighting, boosting minority recall from 68% → 89%.
- Implemented Explainable AI using Integrated Gradients + SHAP values; generated natural language risk narratives for stakeholder decision-making.
- Deployed interactive Next.js dashboard with real-time sync, geospatial visualization, scenario modeling API on Vercel/Railway; CI/CD automation with model monitoring and retraining triggers.

RoboDoc - ML-Powered Health Diagnosis System

- Led team of 4 building health prediction systems using Random Forest and TensorFlow neural networks; achieved 92% accuracy on 5K+ medical benchmark records through cross-validation and hyperparameter tuning.
- Implemented end-to-end ML pipeline: data preprocessing (missing value handling, outlier detection), feature engineering (symptom encoding, medical history normalization), model training with 5-fold cross-validation, and hyperparameter optimization.
- Designed Svelte web dashboard with interactive treatment recommendations, medical history visualization, and confidence score indicators for clinician review; integrated Flask REST API for real-time diagnosis serving.
- Tech: Python (scikit-learn, TensorFlow), Flask, Flutter, Svelte

Mood Therapy - Emotion-Based Music Recommendation Engine

- Developed CNN-based emotion detection system (AlexNet) using OpenCV for real-time facial emotion classification with 88% accuracy.
- Integrated Spotify API to generate personalized music recommendations based on detected emotions using Wavelet Entropy feature extraction.
- Optimized feature selection using PSO algorithm, improving model inference speed by 30%.
- Tech: Python (scikit-learn, TensorFlow, Pandas, NumPy), Flask REST API, Flutter, Svelte

Text Summarization & Content Analysis Platform

- Built NLP system leveraging Hugging Face transformer models and spaCy for automated text summarization across diverse document types.
- Created scalable data pipeline handling document upload, preprocessing, and multi-format summarization (abstractive/extractive) with 95%+ content accuracy.
- Designed Streamlit web interface enabling users to upload documents and generate summaries with key insights in seconds.
- Tech: Python (Hugging Face, spaCy, transformers), Streamlit

FaceTrack - Real-Time Facial Recognition Attendance System

- Engineered multi-model facial recognition system combining OpenCV (Haar Cascades), Dlib (HOG), and FaceNet, achieving 92% accuracy across varying lighting conditions.
- Built Flask REST API processing facial encodings with sub-second latency, supporting batch enrollment and real-time recognition queries.
- Designed SQLite database backend for secure enrollment storage with audit trails and automated attendance logging.