Vivek Karna

⚲ IIT Madras   ✉ karnavivek@gmail.com   ☎ 9182361825   🔗 karnavivek.com   in LinkedIn   ⦿ GitHub

Education

Indian Institute of Technology Madras, Chennai *Jun 2023 – Present*
MS (by Research) in Operations Research (DoMS) *CGPA: 8.31/10*

- ○ **Coursework:** Data Analytics, Supply Chain Analytics, OR Applications, Heuristics, Decision Theory

Vellore Institute of Technology, Vellore *Jun 2017 – Jul 2021*
B.Tech in Production & Industrial Engineering *CGPA: 8.45/10*

- ○ **Coursework:** Python, Operations Management, OOPS

Experience

Teaching Assistant *Chennai, TN, India*
IIT Madras *June 2024 – May 2025*

- ○ Collaborated with professors in various **data science/operations research courses** by **incorporating real-world datasets and case studies**
- ○ Delivered **10+ Hrs** of **Python/Machine Learning Lab sessions** of **Multivariate Statistics** in class of **B-Tech DD (Quant Finance)**, **MS, PhD** students
- ○ Developed **comprehensive data science scripts & exercises** on topics like **clustering, regression, PCA, decision tree, etc** that improved students performance gradually by **20%**

Graduate Engineer Trainee (GET) *Aurangabad, MA, India*
Varroc Engineering Pvt Ltd. *Aug 2021 – Jul 2022*

- ○ Implemented data-driven process optimization using **Six Sigma (DMAIC)** methodology that **reduced changeover time by 77%**, saving **33.09 hrs/m** and generating **Rs 4.86 lakhs in annual savings**
- ○ Designed and executed **120+ time and work studies**, creating interactive data visualizations that identified critical bottlenecks in manufacturing processes
- ○ Built **predictive models to forecast equipment failures**, reducing unplanned downtime by **23%** and improving overall equipment effectiveness
- ○ Recognized with **SPACE Level Kaizen Competition award** for innovative data-driven process improvement solutions

Projects

BLINKTO - Predicting Demand of a Food Delivery App [Forecasting] *GitHub* ↗

- ○ Conducted **EDA**, **Data Viz.**, **PACF**, **ACF**, **ADF test** to infer about stationarity, and converting non-stationary time series using first order differencing.
- ○ Predicted Demand forecast using state-of-the-art **ARMA**, **ARIMA** and **LSTM** model with extensive Hyperparameter tuning that improved model accuracy by **18%**, optimizing for epochs, batch size, & lags.
- ○ Demonstrated ***Proof-of-concept*** using **Streamlit** allowing users/stakeholders to get insights in a glance.

IDLEE - Project based Case Study on Optimizing VRP with Time Windows [HDM Course Project] *GitHub* ↗

- ○ **Developed MILP model** for **VRPTW** using **Gurobi** for Random Generation and Fixed Positions of Franchises & Customers.
- ○ Designed **Heuristics** to find sub-optimal feasible solution to reduce computational load when using MILP approach.
- ○ *Milestone* - Secured Highest Grade among all the projects submitted

Predicting Premium Amount on Insurance using Neural Network *GitHub* ↗

- ○ Conducted intensive **EDA** over **1.2 million** datapoints using various **Imputation techniques** & **Data Viz.** ranging from **20+** features.

- Developed & Hypertuned Models like Linear Regression, GBM, LightGBM and Neural Network to gain **Top 61%** on Kaggle Leaderboard.
- Utilized metrics like **MSE**, **MAE** and **RMSLE** for model validation and achieved **1.08896** RMSLE Score.

Research Work & Conferences

MS Thesis *Vivek Karna, Dr. Rahul R Marathe* (Ongoing) Abstract ↗
- Ongoing research to develop a tool for the **integrating predictive and prescriptive models** to **tackle uncertainty** in data, optimization & ML models.

LSO Workshop, IIT Bombay
- Attended workshop on Advance OR Techniques & gained hands-on experience with CPLEX, Gurobi to solve OR Problems

Paper Accepted in INFORMS International Meetings Conference, to be held at SINGAPORE

Skills & Technologies

Languages: Python (*Pandas, NumPy, Scikit-Learn, PyTorch, Statsmodels)*, SQL
ML/DS: Regression, Classification, Clustering, Forecasting, Neural Networks, LSTM, Transformers
Optimization: Linear Programming, Mixed Integer Programming, Heuristics, Gurobi
Data Visualization: Tableau, Matplotlib, Seaborn, Streamlit
Tools & Technologies: Git, GitHub, LaTeX, Excel
Business Methods: Six Sigma (Green Belt), DMAIC, Kanban, Scrum, Project Management

Position of Responsibility

Placement Coordinator
- Coordinated with **55+ companies** for Final Placement drives for IITM Students.
- On-boarded & Managed **4** companies as a team into 2024's IITM Placement Drive.

Scholastic Achievements

- **AIR 428 in GATE-22 (PI)** - Awarded Rs 10,000 by Unacademy Ranker Felicitation Program
- **HTRA Scholarship Recipient** - Awarded by Ministry of Human Resource Development, Govt. of India
- **2nd Place, AIRSS 2025 Conference** - Recognized for research on Stochastic Constraint Learning Framework in the Optimization and Machine Learning domain

Certifications

GREEN BELT SIX SIGMA (WCMS) — Machine Learning Specialization by Andrew Ng (Coursera) — Sequence Models in DLS by Andrew Ng (Coursera) — LSO Workshop 2025 — Project Management: Zero to Pro (Udemy) — Operations & Supply Chain Management (Udemy) — Python for Data Analyst (Codebasics) — Python (Hackerrank) — SQL (Hackerrank)