

Weekly Progress Report

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Domain: **Data Science and Machine Learning**

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Week Ending: 02

I. Weekly Activities & Progress

This week, my focus was divided into two main areas:

1. Learning & Skill Enhancement:

- Studied the Data Science & Machine Learning e-book provided in the portal.
- Covered essential topics: data science process, feature engineering, exploratory data analysis (EDA), and basics of machine learning models for forecasting.
- Gained deeper understanding of time series data, handling missing values, and data visualization techniques.

2. Practical Application using Project Dataset:

- Continued working with the traffic dataset.
- Explored patterns further by:
 - Analysing traffic volume by **day of week** and **hour of day**.
 - Visualizing holiday vs. normal day traffic.
 - Identifying potential outliers or unexpected peaks.
- Prepared the dataset by cleaning and formatting for next stage: building forecasting models

II. Milestones Achieved

1. Completed reading and summarizing key chapters from the Data Science & Machine Learning book.
2. Created new visualizations to understand seasonality and daily patterns.
3. Added new features to dataset from given csv files (e.g., is_weekend, is_holiday).

III. Challenges & Hurdles

- Understanding how to correctly handle missing data in time series context.
- Choosing the best visualization methods to highlight patterns clearly.
- Deciding which features will be most useful for forecasting.

IV. Lessons Learned

- Importance of thorough data cleaning and pre-processing before modelling.
- How new features (day of week, holiday flags) can improve model performance.
- Learned to think critically about data patterns instead of just coding.

V. Next Week's Goals:

- Try to begin building first forecasting models.
- Evaluate models on historical data and check accuracy.
- Continue refining features and prepare visualizations for report.

VI. Additional Comments:

Nothing special to add this week — just continued learning and exploring the dataset step by step.