

# Machine Learning Internship Project Report

## Task 1: Sales Forecasting System

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Internship Program: Future Interns

Domain: Data Science / Machine Learning

Task Number: 01

Project Title: Sales Forecasting using Prophet Model

Tools Used: Python, Pandas, Prophet, Power BI

Submission Type: Project Report

## 1. Objective

The objective of this project is to develop a Sales Forecasting system that predicts future monthly sales based on historical data.

Sales forecasting helps organizations in better planning, budgeting, and decision-making.

## 2. Dataset Description

The dataset used in this project is the Sample Superstore Dataset, which includes historical sales information such as:

- Order Date
- Sales
- Product Category
- Customer Details

For forecasting purposes, the sales data was aggregated on a monthly basis.

### 3. Tools & Technologies Used

- Python – Core programming language
- Pandas & NumPy – Data preprocessing and aggregation
- Prophet (Meta) – Time series forecasting model
- Jupyter Notebook (Anaconda) – Model development
- Power BI – Data visualization and dashboard creation

### 4. Methodology

#### Step 1: Data Preprocessing

- Converted Order Date column to datetime format
- Grouped data by month
- Calculated total monthly sales
- Renamed columns to Prophet-required format:
  - ds → Date
  - y → Sales

#### Step 2: Model Building

- Initialized Prophet forecasting model
- Trained model using historical monthly sales data
- Generated future sales predictions

#### Step 3: Visualization

- Exported forecast results to CSV file
- Imported CSV into Power BI
- Created a line chart showing Forecasted Monthly Sales

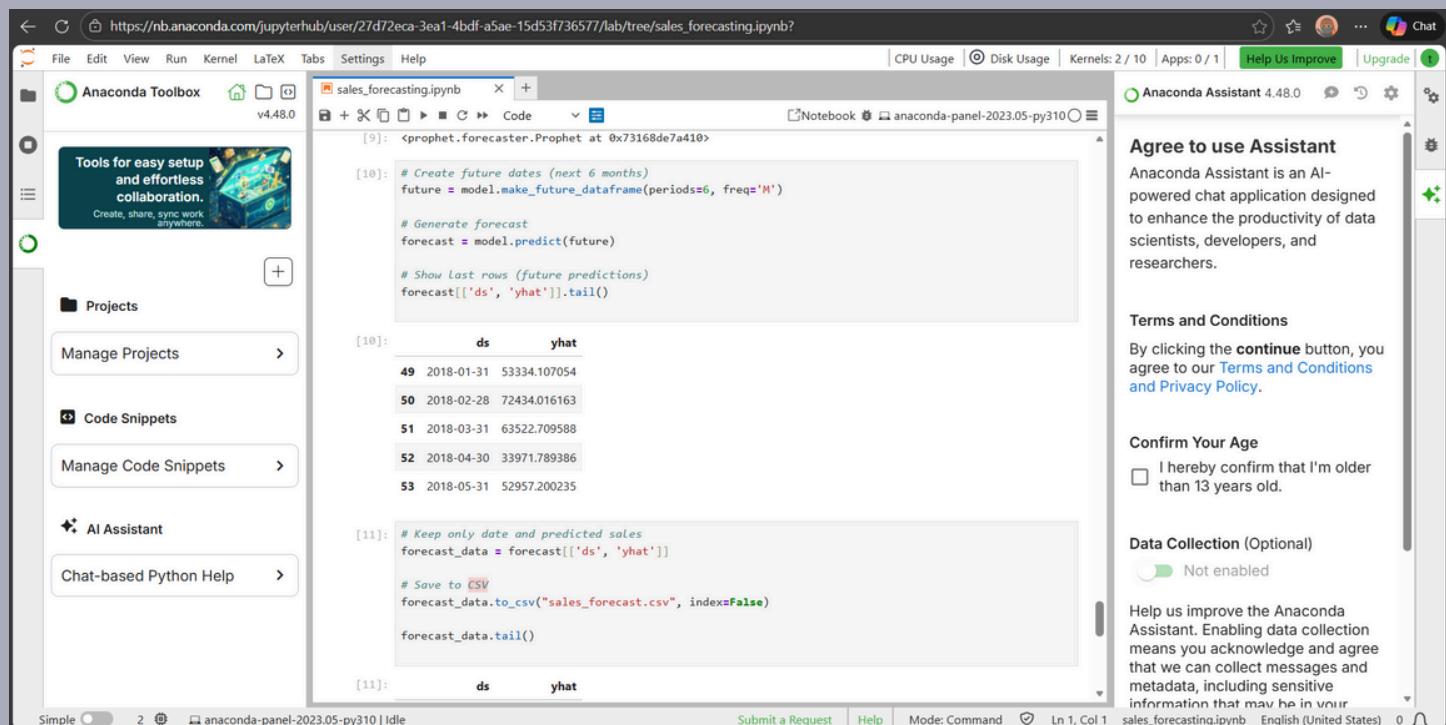
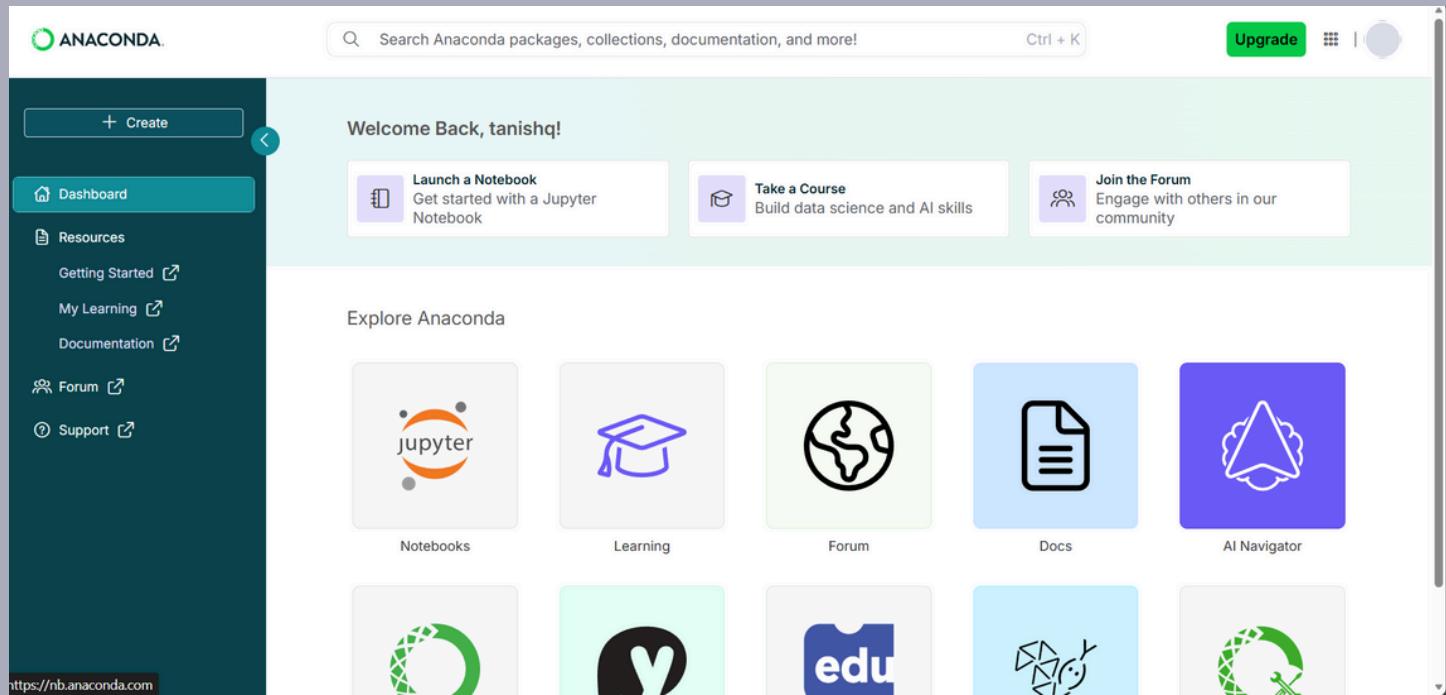
### 5. Dashboard & Visualization

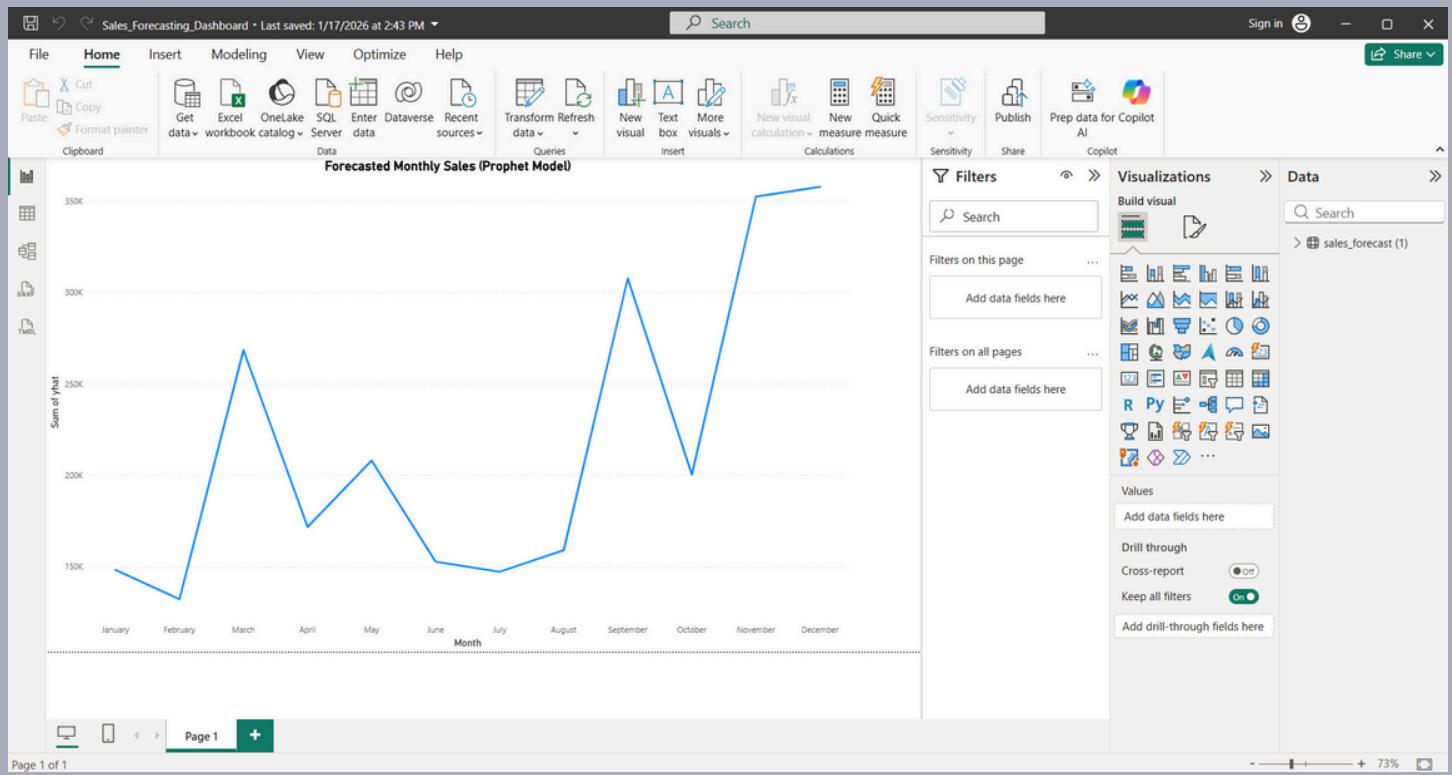
Firstly i added Anaconda screenshot then i added jupiterlab screenshot

A Power BI dashboard was created to visually represent the forecasted sales trend.

## Key Visual

- Line Chart: Forecasted Monthly Sales using Prophet Model





## 6. Results & Insights

- The Prophet model captured clear seasonality in sales.
- Certain months showed higher predicted sales.
- The forecast indicates an upward sales trend towards year-end.
- This insight can help businesses optimize inventory and marketing strategies.

## 7. Conclusion

This project successfully demonstrates the use of machine learning for time series forecasting.

By combining Python-based modeling with Power BI visualization, the forecasted sales insights are presented in a clear and business-friendly manner.

## 8. Future Enhancements

- Add holiday and promotional effects
- Compare Prophet with ARIMA or LSTM models
- Deploy the model using Streamlit for real-time forecasting