Customer Satisfaction Prediction - Project Report

Objective

To analyze customer support ticket data and predict customer satisfaction ratings (scale of 1 to 5) using machine learning.

Dataset Summary

- Total Records: 8,469
- Features:
  - Age, Gender, Product Purchased
  - Ticket Type, Channel, Priority, Status
  - First Response Time, Time to Resolution
  - Target: Customer Satisfaction Rating

Tools & Technologies Used

- Python (Pandas, Scikit-learn, Seaborn, Matplotlib)
- Jupyter Notebook / VS Code
- Excel (optional for viewing raw data)
- Random Forest Regressor for prediction

Steps Followed

1. Data Cleaning: Removed PII columns, converted dates, dropped nulls.
2. EDA: Boxplots, Correlation checks.
3. Encoding: One-hot encoding of categorical variables.
4. Model Building: Train/test split, trained Random Forest.
5. Evaluation: Metrics like MSE, R2 Score.
6. Feature Importance plotted.

Results

- R2 Score: ~0.85

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- Top Influential Features:
  - Time to Resolution
  - First Response Time
  - Ticket Priority
  - Ticket Type
  - Ticket Channel

Conclusion

Faster responses and critical issue handling improve customer satisfaction. Machine learning can help support teams prioritize and optimize service quality.