

Capstone Project

Capstone Project – End-to-End ML Pipeline for Automotive AI: This project builds a complete machine learning workflow using MLflow, covering everything from training to deployment and monitoring—all using a public automotive dataset. Keep the project files available in your VM. The last date for submission is **13th August 2025 11.30 PM**. Late submissions will not be considered. **Any kind of Plagiarism will be treated seriously.**

Dataset: Auto MPG Dataset Dataset URL:

<https://www.kaggle.com/datasets/uciml/autompg-dataset>

1. Train & Pick the Best Model Data Prep: Clean the Auto MPG data (handle missing values, normalize features). Training: Experiment with 5 models (e.g., Linear Regression, Random Forest, etc.). MLflow Tracking: Log metrics (RMSE, MAE) and compare models in the MLflow UI. Save the Best: Register the top-performing model in the MLflow Model Registry.

2. Deployment Local Test: Serve the model as a REST API (e.g., predict MPG for a new car's specs).

3. Monitor in Production Track Metrics: Log real-world prediction accuracy over time. Drift Detection: Alert if new car data differs too much from training data

4. Final Deliverable A fully documented MLflow pipeline showing:

1. Model comparisons
2. Version history and rollback demonstration.
3. Model Deployment
4. Monitoring dashboards for fuel efficiency predictions