**INFERA DATA SCIENCE INTERNSHIP**

**Daily Progress Report**

**Date:** 16th June 2025  
**Intern Name:** Aniruddh Vijayvargia  
**Project:** Multi-Dataset Analysis – Week 1 Assignment  
**Report Day:** Day 4

**1. Executive Summary**

Today was dedicated to **dashboard development and project integration**. I focused on transforming all the work from my Jupyter notebooks (01\_climate\_data\_exploration.ipynb and 02\_traffic\_data\_exploration.ipynb) into an interactive Streamlit dashboard. The main activities included:

* Setting up the Streamlit app structure
* Loading cleaned climate and traffic datasets
* Integrating trained machine learning models for temperature and traffic prediction
* Designing and implementing interactive visualizations for both datasets
* Creating user input widgets for real-time predictions
* Testing the dashboard to ensure smooth user experience and accurate results

There were no meetings or field visits today; the entire day was spent on coding, debugging, and refining the dashboard for presentation and submission.

**2. Tasks Completed Today**

* **Develop and deploy an interactive dashboard** that brings together all EDA, visualizations, and model predictions from the week’s work.
* **Ensure the dashboard is user-friendly** and can be used by stakeholders to explore both climate and traffic data, as well as generate predictions.
* **Prepare the project for final submission** by testing, documenting, and organizing all files.

**3. Technical Work Details**

* Dashboard successfully developed: All key sections (Overview, Climate Analysis, Traffic Analysis, ML Predictions) are functional.
* Models integrated: Both climate and traffic prediction models are now available in the dashboard for real-time predictions.
* Visualizations complete: Users can interactively explore trends and patterns from both datasets.
* Final checks: Completed testing and ensured all files are ready for submission.

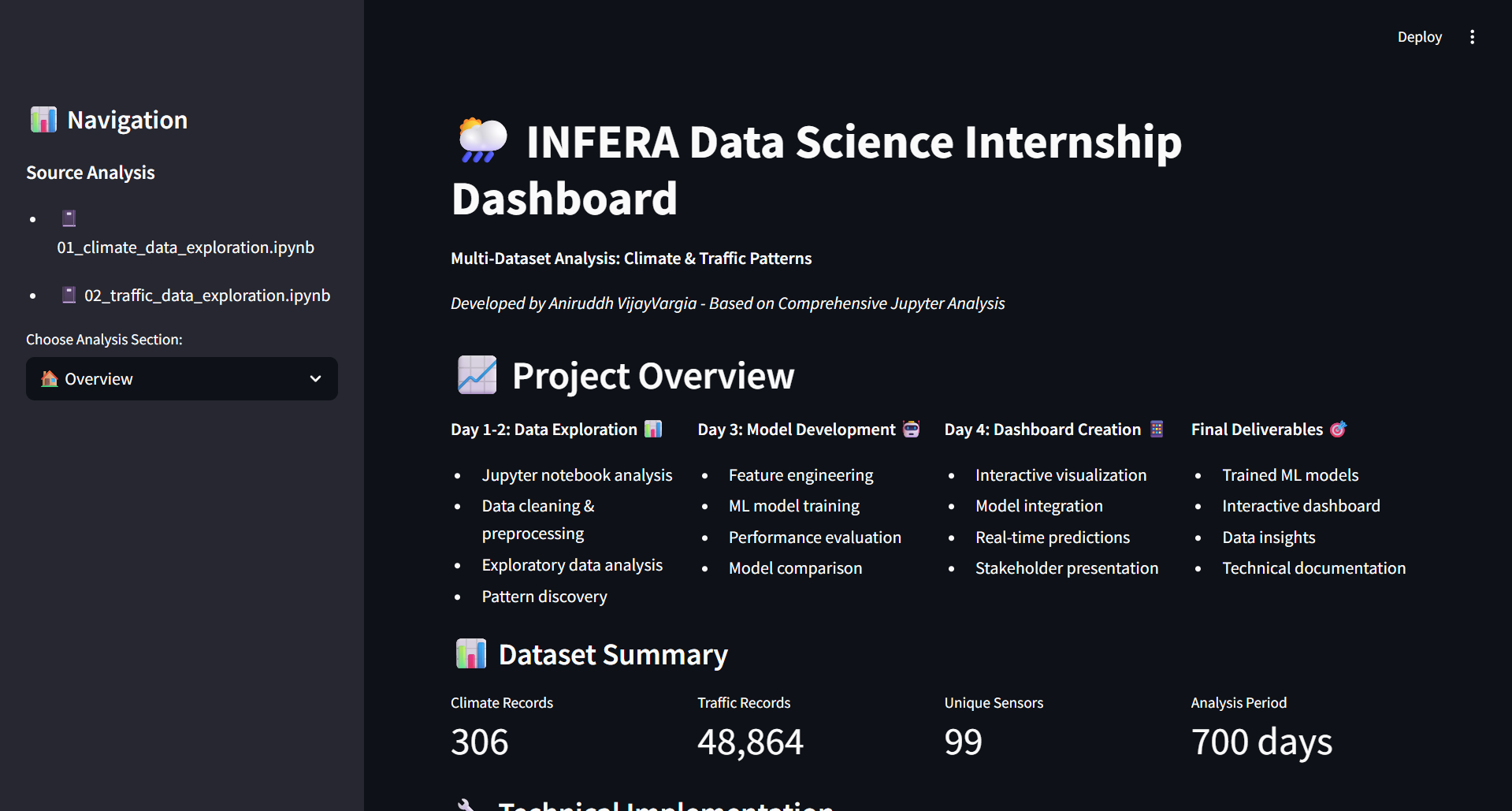
**4. Key Learnings & Insights**

* **Technical Skills:**
* Learned how to build and deploy a Streamlit dashboard from scratch.
* Applied skills in integrating machine learning models into a web interface.
* Enhanced my ability to create interactive data visualizations using Plotly and Matplotlib.
* Improved data handling and error management for user-facing applications.
* **Project Management:**
* Practiced organizing code and outputs for a professional, reproducible workflow.
* Documented my process for future reference and stakeholder clarity.
* **Communication:**
* Focused on making the dashboard intuitive and accessible for non-technical users, translating complex analytics into actionable insights.

**5. Challenges Encountered**

* **Model Integration:** Initially, there were issues with model loading and prediction accuracy, especially for temperature predictions. I had to revisit my feature engineering and model input logic to ensure the dashboard was using the trained model correctly instead of a simple average.
* **User Experience:** Designing an interface that is both informative and easy to use required several iterations and feedback cycles.
* **Debugging:** Encountered some bugs related to missing files or mismatched input features, which were resolved through careful testing and code review.
* **Time Management:** Balancing dashboard development with documentation and testing was challenging but ultimately manageable.

**7. Screenshots & Evidence**

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