**Day 24 – Tuesday, 22 July 2025**

**Topic:** Deployment Preparation **Objective:** Prepare the machine learning model for deployment.

**Summary:**Today’s work focused on preparing the trained *Student Performance Prediction* model for deployment. After completing model optimization, I saved the final Random Forest model using the joblib library in Python, converting it into a serialized file (model.pkl). This process ensures that the model can be loaded and used later without retraining, saving time and computational resources.

I also created a test script to verify that the saved model correctly loads and performs predictions in a new environment. This helped confirm that all dependencies, libraries, and data preprocessing steps were consistent outside the training phase. Additionally, I documented the model’s input and output structure for easier integration into a web-based interface.

**Additional Notes:**

* Ensured compatibility by testing the .pkl model on different systems.
* Verified that prediction outputs matched expected results.
* This stage laid the foundation for the upcoming Streamlit web app integration, where users will input student data and get real-time performance predictions.