

**Task Performed: Model Deployment**

Model deployment is the process of making a machine learning model available for use in real-world applications. In the context of flight fare prediction, model deployment involves integrating the trained machine learning model into a software application that can take input data about a particular flight and generate a prediction of its fare price.

There are several steps involved in deploying a machine learning model for flight fare prediction:

**Data Preprocessing:** The input data must be preprocessed to ensure that it is in the correct format for the machine learning model. This may involve tasks such as converting categorical variables into numerical values or scaling numerical values to ensure they are on the same scale.

**Model Selection:** The machine learning model used for flight fare prediction must be selected based on its performance on the training data. The model should be capable of accurately predicting the fare price of a flight given its features.

**Model Training:** The selected machine learning model must be trained using historical flight data. The training data should be representative of the data that the model will be deployed on.

**Model Evaluation:** Once the machine learning model has been trained, its performance must be evaluated on a separate test dataset. This will give an estimate of how well the model will perform when deployed in a real-world application.

**Model Optimization:** The machine learning model may need to be optimized to ensure that it provides the best possible performance. This may involve adjusting hyperparameters or using feature selection techniques to identify the most important features for predicting flight fares.

**Integration:** The machine learning model must be integrated into a software application that can take input data about a flight and generate a fare prediction. This may involve developing a web-based application that can be accessed via a browser or integrating the model into an existing software system.

**Testing:** The deployed machine learning model should be tested to ensure that it is providing accurate fare predictions. This may involve comparing the predicted fares to actual fares for a set of flights.

**Maintenance:** The deployed machine learning model should be regularly maintained to ensure that it continues to provide accurate fare predictions. This may involve updating the model with new data or retraining the model periodically.

Overall, deploying a machine learning model for flight fare prediction involves a number of steps, from data preprocessing to model training and optimization, to integration into a software application. However, the benefits of accurate fare predictions can be significant for airlines, travel agencies, and customers, making the effort required for model deployment worthwhile.