DEVELOPING A FLIGHT DELAY PREDICTION MODEL USING MACHINE LEARNING

INTRODUCTION

Flight delay is inevitable and it plays an important role in both profits and loss of the airlines. Most of the proposed methods are not accurate enough because of massive volume data, dependencies and extreme number of parameters. These delays not only cause inconveniences to the airlines but also to passengers. The reasons for these delays vary a lot going from air congestion to weather conditions, mechanical problems, difficulties while boarding passengers.

ABSTRACT

Most common problem that is experienced by every airline passenger is flight delay. The flight delay may occur due to the major three reasons. The foremost reason is the abnormal changes in weather, the other reasons include technical problems and successive landing of flights. In this project we are gonna develop a machine learning model to predict the flight delay beforehand. The website is developed to notify the flight delay and show the live weather condition in required area.

METHODOLOGY

DATA COLLECTING AND PRE-PROCESSING

At the beginning of the phase, it is necessary that model inputs be determined so that based on them, model learn and result in final structure. The dataset used for evaluating the model was obtained from historical data which contains flight schedules data for 5 years.

DATA TRAINING, TESTING AND SPLITING OF DATA

The given data set is analysed. The datas are trained and tested. The null values are detected and removed. The datas are splitted into dependent and independent variables.

DEVELOPING ML MODEL

The machine learning model is built based on the trained dataset. The model is evaluated and the best model is choosen from them. The model should satisfy all the requirements of the given problem.

DEPLOYING ML MODEL

To make the model available via API, an endpoint in sagemaker is created as the entry point for inference. The endpoint sets up a Flask web server that responds to incoming inference requests via HTTP. The model is made available to external users with AWS Lambda and a serverless framework, and coded a simple Go function to perform sanity checks on the user inputs and call the inference endpoint.

INTEGRATING ML MODEL WITH UI

The final ML model is integrated with the UI. Gradio is an open source library used to integrate machine learning model with user interface

REFERENCE

1. Maryam Farshchian Yazdi, Seyed Reza Kamel & Maryam Kheirabadi.2020;

https://journalofbigdata.springeropen.com/articles/10.1186/s40537-020-00380-z

2. Yuemin Tang

https://dl.acm.org/doi/fullHtml/10.1145/3497701.3497725

3. Javier Herbas

https://medium.com/analytics-vidhya/using-machine- learning-to-predict-flight-delays-e8a50b0bb64c

4. Jorge de Antonio Del Pecho, Fran Jose Diego Acosta & Anthony Roux

https://developers.amadeus.com/blog/flight-delay-prediction-machine-learning

5. Bhuvan Bhatia

https://scholarworks.calstate.edu/downloads/qr46r081g