

JetInTime: A flight delay predictor

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08th December 2023

1 Data Sources

The data sources used in this project can be divided in two categories: Meteorological data and Flight Status data. Both categories comprehends historical and fresh daily data, used respectively for the initial model training and for daily prediction and model re-training.

The historical Meteorological data are acquired from the SMHI (Swedish Meteorological and Hydrological Institute) Open Data collection called *Meteorological analysis model MESAN (AROME) - historical analysis data*. In this way, we can get access to meteorological analysis on Swedish territory starting from December 2014.

The historical Flight Status data are acquired from the SITA (Société Internationale de Télécommunications Aéronautiques) API called SITA Historical Flight Status API. In this way, we can get access to the status of flight departing from Swedish airports from April 2019.

The daily update of the database is done collecting the daily meteorological analysis data through the SMHI Open Data API Meteorological Analysis MESAN and the daily flights departed through the SITA Flight Status API. Those data are then cleaned and combined in order to be saved according to the already present schema.

2 Prediction Problem

The aim of the project is predict the delay of the flights departing from Swedish airport, e.g. Stockholm Arlanda Airport (ARN) or Stockholm Bromma Airport (BRO). This is done by taking the daily flight list from Swedavia Airport FlightInfo API and collecting the daily forecast from SMHI Open Data API - Meteorological Forecast.

3 Technologies

Each of the technologies used in this project have a specific aim

- **Hopsworks:** feature and model store
- **Modal:** daily inference and prediction scripts
- **HuggingFace:** GUI server hosting
- **Gradio:** GUI creation
- **SMHI APIs:** collect daily meteorological forecast and meteorological historical analysis
- **SITA APIs:** collect historical flight status data and daily departed flight
- **Swedavia API:** collect flights info for future departing flights.