SESAR JOINT UNDERTAKING

9th SESAR Innovation Days

Machine Learning Techniques for Seamless Traffic Demand Prediction

Project Description

Motivation

Improvement of pre-tactical demand forecast:

- New sources of information
- Use of machine learning algorithms
- Hidden parameters estimation
- Uncertainty quantification

Project Objectives

- Improve the prediction of the first flight plan filed by Airspace Users (FFPL)
- Understand the reasons influencing trajectory selection
- Improve reliability of demand prediction

Preliminary results: route choice prediction

Route choice prediction methodology

1. Pair selection
2. Route clustering
3. Feature engineering
4. Model generation and testing

Origin-destination pairs

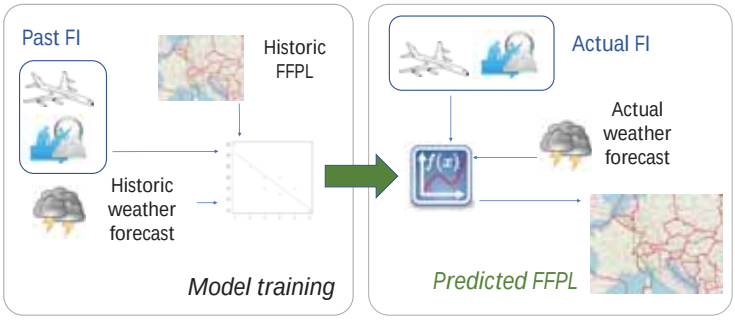
- LIRF-EHAM
- LPPT-LFPG
- LFPG-LGAV
- EDDT-LEPA

Feature engineering

- Flight intentions (FI): schedule, airline, aircraft type
- Weather parameters

Route clustering: LIRF-EHAM

Model generation/testing: model accuracy against current model (PREDICT)



OD PAIR - Accuracy	EDDT-LEPA	LEPA-EDDT	LIRF-EHAM	EHAM-LIRF	LPPT-LFPO	LFPO-LPPT	LFPG-LGAV	LGAV-LFPG
New Model	0.841	0.907	0.610	0.916	0.823	0.624	0.520	0.654
Current Model	0.780	0.859	0.544	0.875	0.554	0.557	0.253	0.471

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