Machine Learning Techniques for Seamless Traffic Demand Prediction

Project Description

Motivation
Improvement of pre-tactical demand forecast:
- New source 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
- LFPC-LGAV
- LPPT-LFPO
- EHAM-LIRF

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

Route clustering
LIRF-EHAM

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

Past FI

Historic FFPL

Historic weather forecast

Model training

Actual FI

Actual weather forecast

Predicted FFPL

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<th>OD PAIR</th>
<th>Accuracy</th>
<th>EDDT</th>
<th>LEPA</th>
<th>EHAM</th>
<th>LPPT</th>
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This PhD study has received funding from the SESAR Joint Undertaking under the European Union’s Horizon 2020 research and innovation programme under grant agreement No 783287. The opinions expressed herein reflect the authors’ view only. Under no circumstances shall the SESAR Joint Undertaking be responsible for any use that may be made of the information contained herein.

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2 – 6 December 2019
Athens, Greece