

PROJECT

PERF-AI

Enhance aircraft performance and optimisation through utilisation of artificial intelligence

Funding: European (Horizon 2020)

Duration: Nov 2018 - Oct 2020

Status: Complete

Total project cost: €705,125

EU contribution: €568,550



Call for proposal: H2020-CS2-CFP07-2017-02

[CORDIS RCN : 218509](#)

Objectives:

PERF-AI will apply machine learning techniques on flight data (parametric & non-parametric approaches) to accurately measure actual aircraft performance throughout its lifecycle.

Within current airline operations, both at flight preparation (on-ground) & at flight management (in-air) levels, the trajectory is first planned, then managed by the Flight Management System (FMS) using a single manufacturer's performance model that is the same for every aircraft of the same type, & also on weather forecast that is computed long before the flight. It induces a lack of accuracy during the planning phase with a flight route pre-established at specific altitudes & speeds to optimize fuel burn, from take-off to landing using aircraft performances that are not those of the real aircraft. Also, the actual flight will usually shift from the original plan because of Air Traffic Control (ATC) constraints, adverse weather, wind changes & tactical re-routing, without possibility for the flight crew, either using the FMS or through connected services to tactically recompute the trajectory to continuously optimize the flight path. This is due to the limitations of the performance databases that the current systems are using.

Hence, PERF-AI is focusing on identifying adequate machine learning algorithms, testing their accuracy & capability to perform flight data statistical analysis & developing mathematical models to optimize real flight trajectories with respect to the actual aircraft performance, thus, minimizing fuel consumption throughout the flight.

The consortium consists of Safety-Line (FR) & INRIA (FR), having full expertise at Aircraft Performance & Data Science, hence, able to fully propose, test & validate different statistical models that will allow to accurately solve some optimization challenges & implement them in an operational environment.

PERF-AI total grant request to the CSJU is 568 550€ with total project duration of 24 months.

Parent Programmes:

[H2020-EU.3.4. - Horizon 2020: Smart, Green and Integrated Transport](#)

Institute type: Public institution

Institute name: European Commission

Funding type: Public (EU)

Other programmes: JTI-CS2-2017-CfP07-SYS-01-08 Application of machine learning techniques to enable and enhance aircraft performances database and facilitate mission optimisation objectives

Lead Organisation:

Safety Line

Address:

130 RUE DE LOURMEL

75015 PARIS

France

EU Contribution: €318,675

Partner Organisations:

Institut National De Recherche En Informatique Et Automatique

Address:

Domaine de Voluceau- Rocquencourt
B.P. 105 LE CHESNAY
France

Organisation Website:

<http://www.inria.fr/>

EU Contribution: €249,875

Technologies:

Information systems

Machine learning for air traffic management

Development phase: Research/Invention

STRIA Roadmaps: Vehicle design and manufacturing, Network and traffic management systems

Transport mode: Air transport

Transport sectors: Passenger transport, Freight transport

Transport policies: Other specified

Geo-spatial type: Other