

## Task description for Yigithan Kandur

Matriculation number  
21757623

### Design of a climate optimized „North Atlantic Organized Track System“

#### Masterthesis

#### Description

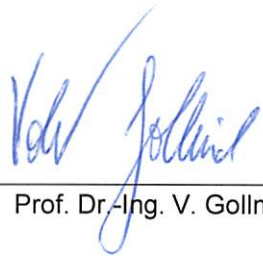
At the TUHH Institute of Air Transportation Systems, new concepts for operational procedures are developed. Due to the increasing awareness of society with regard to climate protection as well as high level climate goals (e.g. Flightpath 2050), besides economical aspects also ecological aspects play an increasing role in the development of new operational procedures. At the moment, the air traffic in the North Atlantic region is organized as “Organized Track System”. Based on daily weather forecasts, every day flight routes between Europe and America are defined which are optimized with regard to wind. Within this thesis, an Organized Track System which is optimized with regard to climate impact shall be developed, tested and compared with the current system.

#### Steps

- Familiarization with the topic and literature research, especially regarding:
  - The North Atlantic Organized Track System
  - Climate impact of aviation (especially non-CO<sub>2</sub>-emissions)
  - Graph-based optimization algorithms (e.g. Dijkstra and A\*)
- Development of an algorithm in order to determine North Atlantic Tracks
  - Considering wind (reference case)
  - Considering climate impact
- Verification of the results based on the daily published North Atlantic Tracks
- Estimation of potential climate impact savings of a climate optimized North Atlantic Track System in comparison to the current system
- Estimation of potential additional operating costs
- Analysis and interpretation of the results
- Documentation and presentation of the results

**Date of issue:** February 3rd 2020

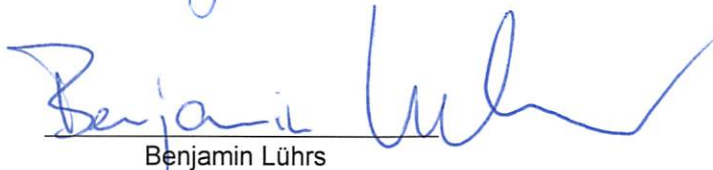
**Submission date:** August 2nd 2020



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