University of Stuttgart
Faculty 6: Aerospace Engineering and Geodesy
IRIS: Interchange Forum for Reflecting on Intelligent Systems

Towards safe single-pilot operation

Master Thesis:
Analyzing patterns of collaboration between AI and human in the context of single-pilot operation

Bachelor Thesis:
Development of a Test Environment for Evaluating AI-Human Collaboration in Microsoft Flight Simulator

Motivation: Flying has been one of the safest modes of transportation for decades thanks to its high quality standards throughout the development, testing, operation, maintenance and inspection of aircraft. AI technologies could enable single-pilot operations, where one pilot is in command of all the flight operation. Before that is reality, we need to ensure a safe and reliable interaction between an AI and a human.

Goal: The goal of this project is to evaluate requirements on the information exchange between both agents (human and AI) via experiments on the Microsoft flight simulator.

Master thesis:

- Literature research on evaluation methods in human-machine teaming
- Familiarization with the flight simulator and potential measurement devices
- Create, perform and evaluate behavioral experiments with human participants

Interested?
Jun.-Prof. Dr. rer. nat. Maria Wirzberger
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Bachelor thesis:

- Familiarization with the flight simulator and existing interface modules developed by ILS
- Design and development of a surrogate for an AI agent
- Extension of the ILS module based on evidence from behavioral experiments

Interested?
Prof. Dr.-Ing. Zamira Daw
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The theses will be supervised jointly by Prof. Dr.-Ing. Zamira Daw (Faculty 6) and Jun.-Prof. Dr. rer. nat. Maria Wirzberger (IRIS). It is expected that both students work as a team.