Aushang bis zum 31.08.2022

Advanced Design Project

Use cases for intelligent maintenance of electrical drive systems in future aviation

Background:
Do you enjoy analyzing, exploring and identifying solutions to solve complex problems? Join us at the Institute of Flight Systems and Automatic Control (FSR) in cooperation with Rolls Royce Electrical (RRE). In the research project ETHAN, the FSR is working on Condition Monitoring concepts and measurement aggregation hardware for future (hybrid) electrical aircrafts. In coordination with RRE and many more partners, our goal is to develop a condition monitoring concept from scratch. The usage of machine learning methods will be a strong focus to derive system health states and predict Remaining Useful Lifetimes (RUL). Your aim in this project will be the collection, analysis and evaluation of use cases for intelligent maintenance in terms of Predictive Health Management (PHM) in future electric aviation.

Work Statement:

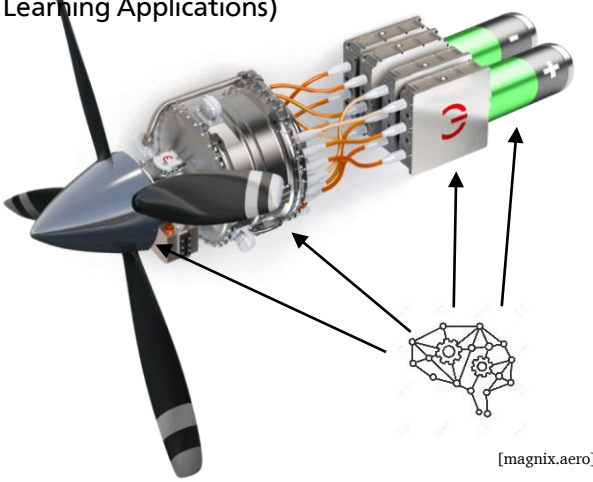
In this project your task is to identify and evaluate use cases under consideration of economic attractiveness, technical feasibility and sustainability. In a first step you will do an extensive literature review of possible use cases. These should be expanded and technically discussed in prepared interviews with RRE. Using assumptions based on the literature, interviews, and FSR expertise, use cases should be evaluated in a way that considers both economic benchmarks and technical feasibility, which can additionally be considered from a sustainability perspective. For this purpose, probabilistic approaches are to be chosen and an outlook on potentially necessary as well as available sensor technology has to be given. The project finishes with the documentation and presentation of the results.

Requirements/Skills:

- Currently enrolled in a Bachelor/Master's degree program in Mechanical Engineering, Computational Engineering, Computer Science or similar
- Aero Space, Electrical Engineering or Mechatronics Master desired
- Strong background in aviation, electrical components, sensor technology and PHM beneficial
- Highly motivated team player
- Beneficial lectures: Avionics Systems Safety, (Machine Learning Applications)

Tasks:

- Getting familiar with the topic, researching and evaluating applicable designs
- Conduct interviews with RRE and partners
- Collect, analyse and evaluate use cases
- Choose probabilistic approaches and identify necessary sensor technology
- Documentation and presentation of the results



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Organisational:

Start according to agreement
(immediately available)

Contacts:

Franz Enkelmann, enkelmann@fsr.tu-darmstadt.de

Henrik Simon, simon@fsr.tu-darmstadt.de