Advanced Research Project
Natural Language Processing for Aviation Incident Reporting

**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) and Boeing’s Research and Rapid Development Lab in Frankfurt to advance digital solutions for the aviation industry across a multitude of. The FSR at TU Darmstadt has an ongoing research history in the field of avionics systems safety and human factors on the flight deck. At the same time, research activities in the field of Prognostics and Health Management make use of machine learning methods, with novel trends looking into Natural Language Processing. Together with Boeing your aim will be to work on optimizing algorithms and combining scientific papers, literature and data sources together to define and develop unique solutions for the aviation industry.

**Work Statement:**
This project aims to increase safety by providing insights to factors of aviation incidents through applying data science to the aviation incident reports. Even with a lot of data already being collected nowadays, there is still a lot of potential in analyzing existing data for the causes of various incidents. With further insights on historic events many incidents could have potentially been avoided in the past and could be avoided in the future. To gain a better understanding, Natural Language Processing (NLP) can be applied to incident reports stored to a publicly available dataset.

**Requirements/Skills:**
- Currently enrolled in a Bachelor/Master’s degree program in Mechanical Engineering, Computational Engineering, Computer Science or similar
- Fluent in English; German not required but beneficial
- Strong background in data analytics, data mining and machine learning
- Strong skills in Python
- Highly motivated team player
- Beneficial lectures: Avionics Systems Safety, Machine Learning Applications

**Tasks:**
- Getting familiar with the topic, researching and evaluating applicable methods
- Create a correlative analysis of human factors and aviation incidents
- Deploy a natural language processing solution using the NASA Aviation Safety Reporting System (ASRS) database
- Discussion and assessment of the results
- Documentation and presentation of the results

**Organisational:**
Start according to agreement (immediately available)

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