TUHH
Technische
Universität
Hamburg

Master Thesis

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Open Aviation Accidents Database Analysis for Takeoff and Landing Systems-Driven Safety Assessment

Background

Nowadays, generation, distribution, and access databases among different sectors in the aeronautical community is the cornerstone for cross-fertilization of interdisciplinary knowledge. It also paves the way for the exploration of innovative and unconventional ideas and research problems. Although this is still sometimes hindered by data confidentiality and proprietorship obstacles, modern open- source/access services are transforming status-quo by sharing high-quality datasets with the general public.

In this thesis, text analytics and web meta-data mining methods will be applied to extract thousands of brief aviation accidents multi-dimensional datasets that contain detailed textual and numeric information about both accidents and incidents time and location, aircraft and flight data, and development narratives. Once generated, this database will be utilized to track time-dependent takeoff and landing (LTO) process safety trends and establish a profound understanding of the human and high/low systems-driven LTO failures based on official investigations conclusions.

Tasks

- Become acquainted with the online databank structure and accessibility.
- Develop the algorithm for the automated data mining, extraction, database structuring.
- Run exploratory data analysis and aggregate general LTO-operation accident/incident classifications.
- Identify and quantify LTO systems-driven accidents/incidents based on the reported descriptions, e.g. relation to landing gear, thrust reverser, and etc. malfunctions.
- Classify LTO accidents/incidents based on the potential influencing high-level Air Transport System, i.e. airline, airport, aircraft/manufacture, and air navigation system.
- Analyze findings to derive potential low-dimension regression models.
- Discuss, document, and present results.

Requirements

- Studies in aeronautics, systems engineering, informatics, process automation, or general engineering.
- Affinity for data science or programming (MATLAB, Python, etc.) is advantageous and helpful.
- Analytical and critical thinking, basic background in statistics is a plus.
- Professional written and spoken English or German.
- Structured, goal-oriented, and collaborative mindset.

Begin, Duration and Place

Immediately (**Sept. 2022**), for about 6 months in Home Office & ILT

Contact & Application (CV, short cover letter)

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