Knowledge Transfer Office
香港城市大學
City University of Hong Kong

Method of Presenting Flight Data of an Aircraft and a Graphical User Interface for Use with the Same

Communications & Information

Computer/AI/Data Processing and Information Technology

Opportunity

Since the 1950s, the aviation industry has recorded flight data in order to monitor flight conditions such as air pressure and engine performance. To interpret the data being recorded, the industry developed an analysis methodology known as “Exceedance Detection” (ED). With time, ED has become increasingly accurate and efficient. The problem with ED is that it can only detect hazardous events based on known issues that have occurred in the past—it cannot detect anomalies that have not been previously recorded in flight data.

In response to this, a series of methodologies collectively known as ClusterAD (for “Cluster-based Anomaly Detection”) have been developed that can detect abnormal flight patterns based on common flight data patterns. In other words, with ClusterAD, flight data from past accidents is unnecessary. This invention utilizes ClusterAD to detect flight abnormalities and visualize flight patterns in an accessible and efficient way.

Technology

This invention uses AI to process flight data after it has been uploaded to a data source. Processing the data involves cleaning data that might contain erroneous samples and extracting the data for analysis. The invention also involves storing flight data in a specific format for later analysis. The invention provides a method for analyzing the data and outputting common data patterns and uncommon data patterns, thereby allowing the AI to identify abnormal flights. The invention also includes methods of visualizing the results of the aforementioned flight data analysis. This invention’s software allows users to (1) view available flights and the current status of a fleet of aircraft, (2) configure and perform flight data analysis, and (3) view analysis results and visualizations of those results.

Advantages

- The current ED methodology of flight data analysis requires storage in a database with regular maintenance, whereas this invention is much more resource-efficient.
- This invention offers a way of visualizing analysis results, unlike current flight data analysis methodologies.

Remarks

3rd Asia Exhibition of Innovations & Inventions Hong Kong (AEII) (2023) - Gold with Congratulations of Jury Award

IP Status

Patent granted

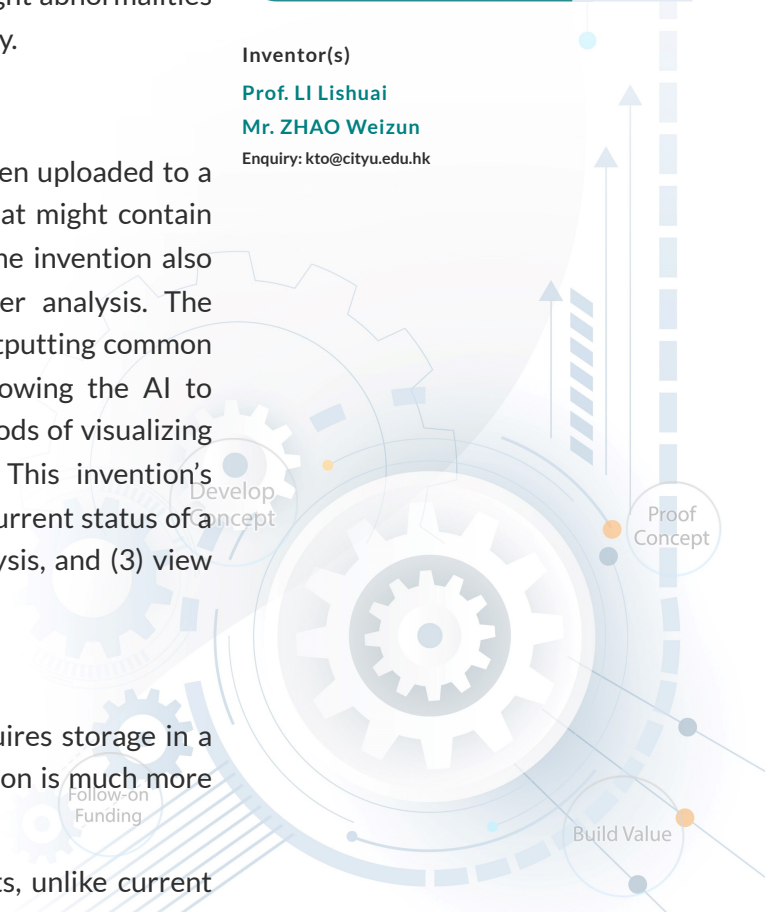
Technology Readiness Level (TRL) ? 4

Inventor(s)

Prof. LI Lishuai

Mr. ZHAO Weizun

Enquiry: kto@cityu.edu.hk



- This invention enables users to conduct different types of flight data analysis with user-friendly, modern software.

Applications

- This invention enables airline companies to analyze flight data in order to identify and compare common flight data patterns and also detect abnormal flights.
- The invention can be applied in terms of flight safety management: experts can use the invention to detect potential risks that are currently unknown.
- The invention can be employed in pilot training: the invention can be used to help pilots see whether their flight data follows the same patterns as those of other qualified pilots.