

Post-Flight Data Analysis Tool

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Background

Since the retirement of the Shuttle program in 2011, NASA has been working on returning human space flight launches to the United States through the Commercial Crew Program (CCP). Currently, there are two commercial providers planning to perform uncrewed and crewed test flights at the end of this year to demonstrate their readiness to perform rotational flight missions to the International Space Station (ISS).

Commercial providers must be certified by NASA's Commercial Crew Program in order to perform regular flights to the ISS. Different aspects of the test launches are analyzed to ensure that the provider meets safety and mission requirements.



Introduction

As part of the CCP engineering team, specifically Ground Command and Control, I was tasked with implementing a tool that will facilitate the retrieval and analysis of post-flight data. This allows our team and other teams to effectively and efficiently analyze and evaluate post-flight data in order to certify commercial providers.

Project/Analysis Tool

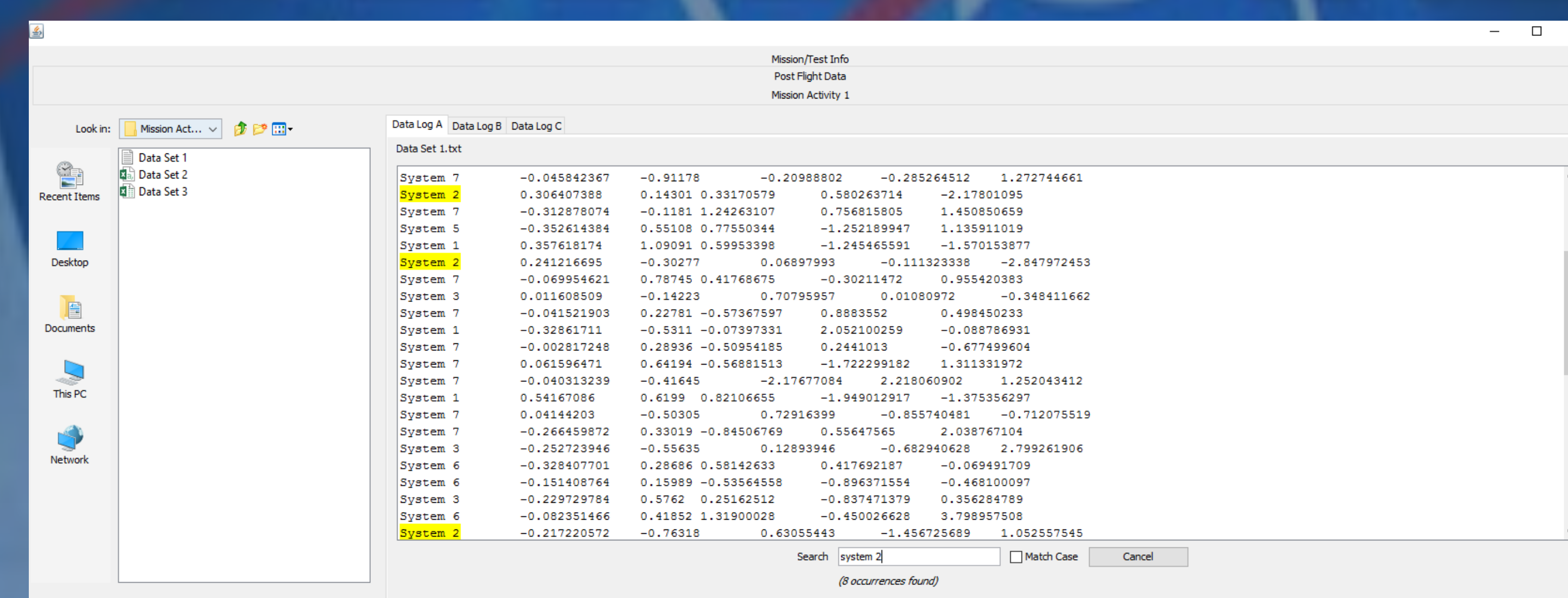
Currently, multiple solutions for data retrieval are available, but it is difficult for engineers to read and analyze the data in the existing format. Thus, priority has been given to the implementation of an analysis tool in Java. The tool provides a user interface (UI) with multiple features that allow engineers to easily read and analyze post-flight data.

Each feature was designed to serve a specific purpose and to read specific data types. For the purposes of this presentation, tool features have been modified to protect Sensitive but Unclassified (SBU) information.

Features

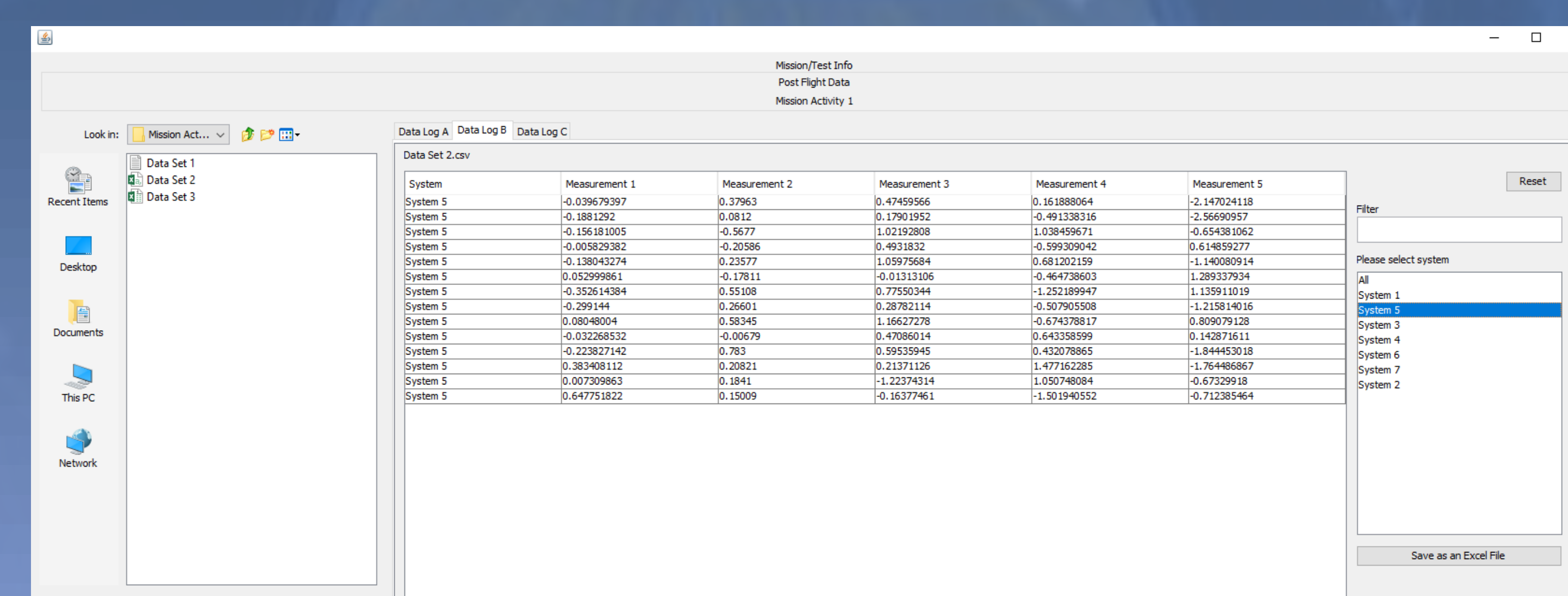
Data Log A

Reads data logs in text format and allows the user to easily search and find keywords in the text.



Data Log B

Reads data in CSV or Excel format and displays it in a table allowing the user to sort the table, filter data using keywords, group rows based on a specific criteria, and save filtered results into an Excel file.



Conclusion

The analysis tool is one of multiple phases of this project that will allow me to learn about the ways data is used and analyzed, work with different teams and be able to contribute to the work of the CCP in returning human space flight to the United States.

The next phase of this project is to test and configure alternative solutions for retrieving and analyzing data, and modifying these solutions to meet the needs of the Ground Command and Control team. This phase will also include implementation of plotting and graphing mechanisms using MATLAB and Winplot scripts.

With the completion of this project, Ground Systems Engineers will have a complete data retrieval and analysis suite that will be used to help them develop their Post-Flight Data Analysis packages.



References

- <https://www.nasa.gov/feature/nasa-commercial-crew-program-mission-in-sight-for-2018>
- <https://blogs.nasa.gov/commercialcrew/2018/01/11/nasas-commercial-crew-program-target-test-flight-dates-2/>
- <https://blogs.nasa.gov/commercialcrew/2015/01/26/10-more-things-to-know-about-commercial-crew-transportation/>
- <https://blogs.nasa.gov/commercialcrew/wp-content/uploads/sites/230/2014/12/CCP-mag-wall.jpg>