



# WPI

## Airline Analytics and Services

A Major Qualifying Project completed in partial fulfillment of the requirements for the Degree in  
Bachelor of Science at Worcester Polytechnic Institute, Worcester, MA

In

Computer Science

By

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## Abstract

This project is performed in connection with the Amadeus Company, which is a company specialized in airline data analytics and management of flight reservations. Amadeus is a backend supporter for several frontend reservation sites, e.g., Kayak, and airline sites, e.g., Lufthansa. The project develops a collection of software tools used in the company to enable better understanding of the data, extraction of useful information and knowledge from the raw data, and enhanced analysis and prediction of polling efficiency, i.e., when to poll more-recent data from the different sites to update Amadeus repository before making decisions. The group developed two major applications, which are: (1) A file browser tool with a handy graphical user interface (GUI), and (2) A scalable MapReduce –based feature extraction library. The file browser is a tool having an intuitive interface designed to ease the data access on the Amadeus server. The feature extraction library is a combination of applications for collecting, sampling and pre-processing the data, and organizing the output in various ways to be utilized by further analysis, e.g., data mining and machine learning techniques to consequently improve the polling efficiency. In addition to these two applications, our team has also investigated several approaches for data processing, studying the tradeoffs between them, and reporting our findings.

## Acknowledgements

We would like to thank our advisor and professor, Mohamed Eltabakh, for his help and guidance throughout the project. He played a crucial role to the completion and success of the various tasks assigned by Amadeus. We enjoyed our weekly meetings and this project would have not been possible without all of your help!

We would like to also thank Amadeus team, more specifically, Remi Moretti, Francis Sauch, Akhil Jaggarwal, Nicolas Pasquier-meunier, and Edouard Hubin for their effort in describing the entire system to us, assigning well-defined tasks with clear goals and outcomes to us on a weekly basis, providing all needed information, and finally hosting us at Amadeus site each week.

Thank you!

## Authorship

This report was written by Kyle Burns, Iveri Prangishvili, and Zachary Chupka. All chapters were done in collaboration and are the responsibility of the group.

## Confidentiality

The rest of this report is omitted for the confidentiality related to its content. However, the complete report is reviewed by our advisor Prof. Mohamed Eltabakh and it is submitted and deposited in Amadeus Company.