

MICHIGAN STATE

UNIVERSITY

Project Plan Presentation

Performance Scorecard Automation

The Capstone Experience

Team United Airlines Airport Operations

Cynthia Trocinski

Danny Lee

Griffin Klevering

Noah Little

Guanzhang Zheng

Department of Computer Science and Engineering
Michigan State University

Spring 2022



*From Students...
...to Professionals*

Functional Specifications

- Help United Airlines save time creating scorecards for each of their 7 main hubs.
- Automating the transferring of data into a more readable form.
- Simple to use, once the correct filenames are set it can be used in one click.



Design Specifications

- Designed to be as simple and quick as possible.
- Desktop application.
- User selects eight data files at once, the system automatically identifies the files based on the user's specifications and creates the scorecard.
- User can change the names of the files the system will accept.
- User can specify the destination of the completed scorecard.



Screen Mockup: Main Menu

United Airlines Scorecard Generator

UNITED 

Please select valid Excel Spreadsheets

Overall Rating.xlsx	Select
AO Training Reports.xlsx	
AO Injury Reviews.xlsx	
LRS Data.xlsx	
OPEN CAPAs.xlsx	
MOCHA LOSA.xlsx	
Damages.xlsx	
Injuries.xlsx	

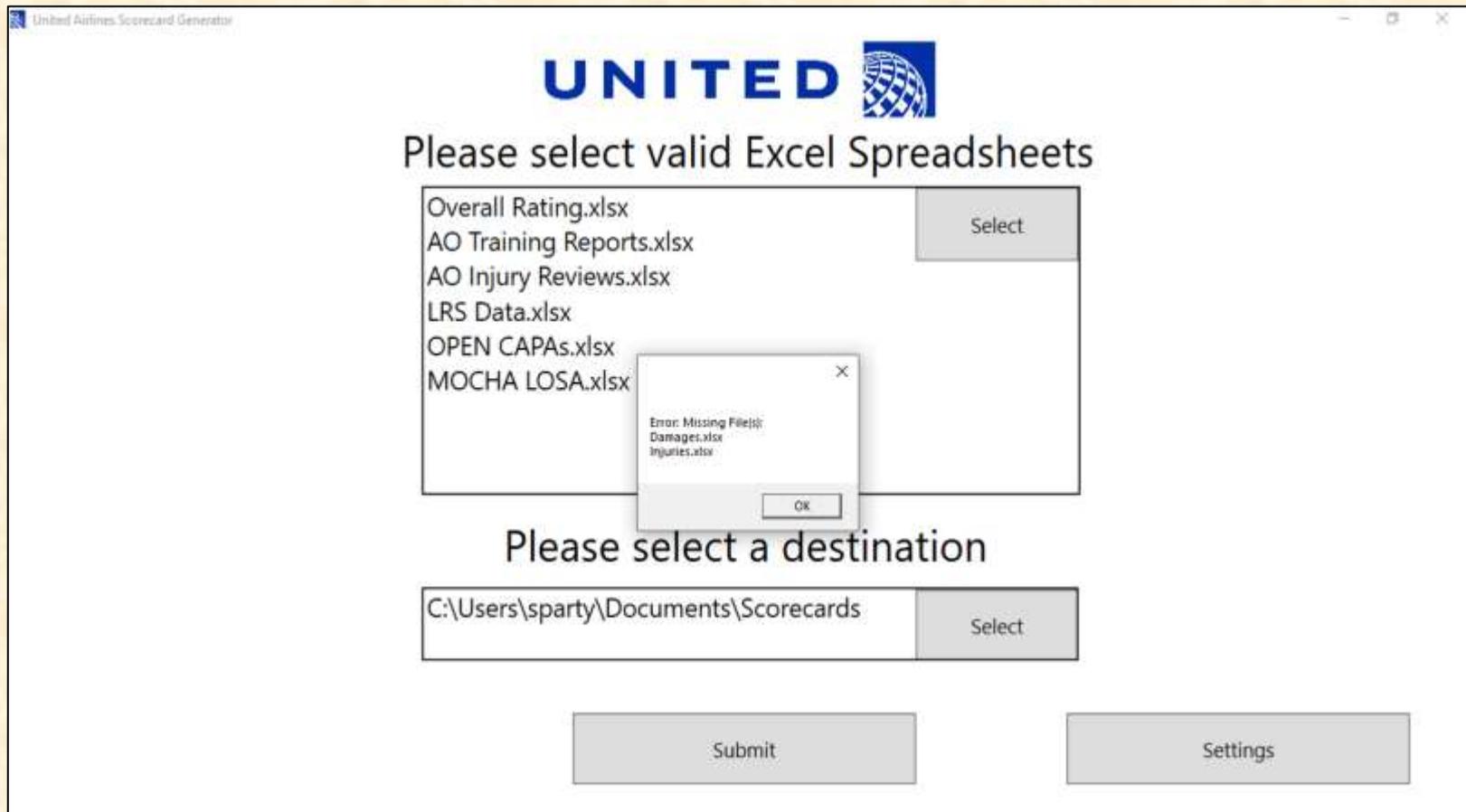
Please select a destination

C:\Users\sparty\Documents\Scorecards	Select
--------------------------------------	--------

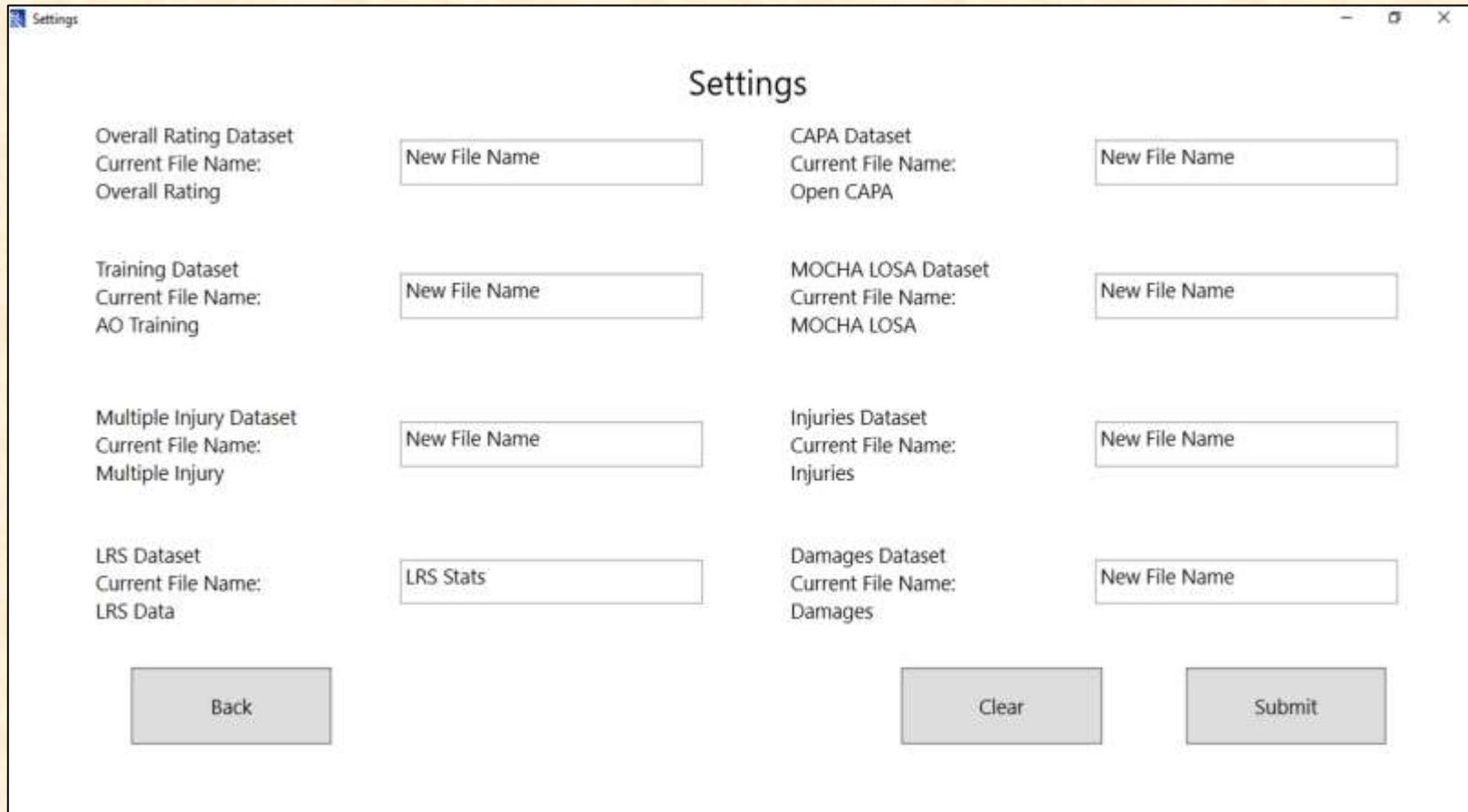
Submit Settings



Screen Mockup: Entry Error



Screen Mockup: Settings



The image shows a software window titled "Settings" with a standard Windows-style title bar (minimize, maximize, close buttons). The window content is organized into two columns of settings. Each setting consists of a label, a "Current File Name" label, and a text input field. The settings are as follows:

Setting Name	Current File Name
Overall Rating Dataset	New File Name
Training Dataset	New File Name
Multiple Injury Dataset	New File Name
LRS Dataset	LRS Stats
CAPA Dataset	New File Name
MOCHA LOSA Dataset	New File Name
Injuries Dataset	New File Name
Damages Dataset	New File Name

At the bottom of the window, there are three buttons: "Back" on the left, "Clear" in the center, and "Submit" on the right.



Screen Mockup: Settings Corrected

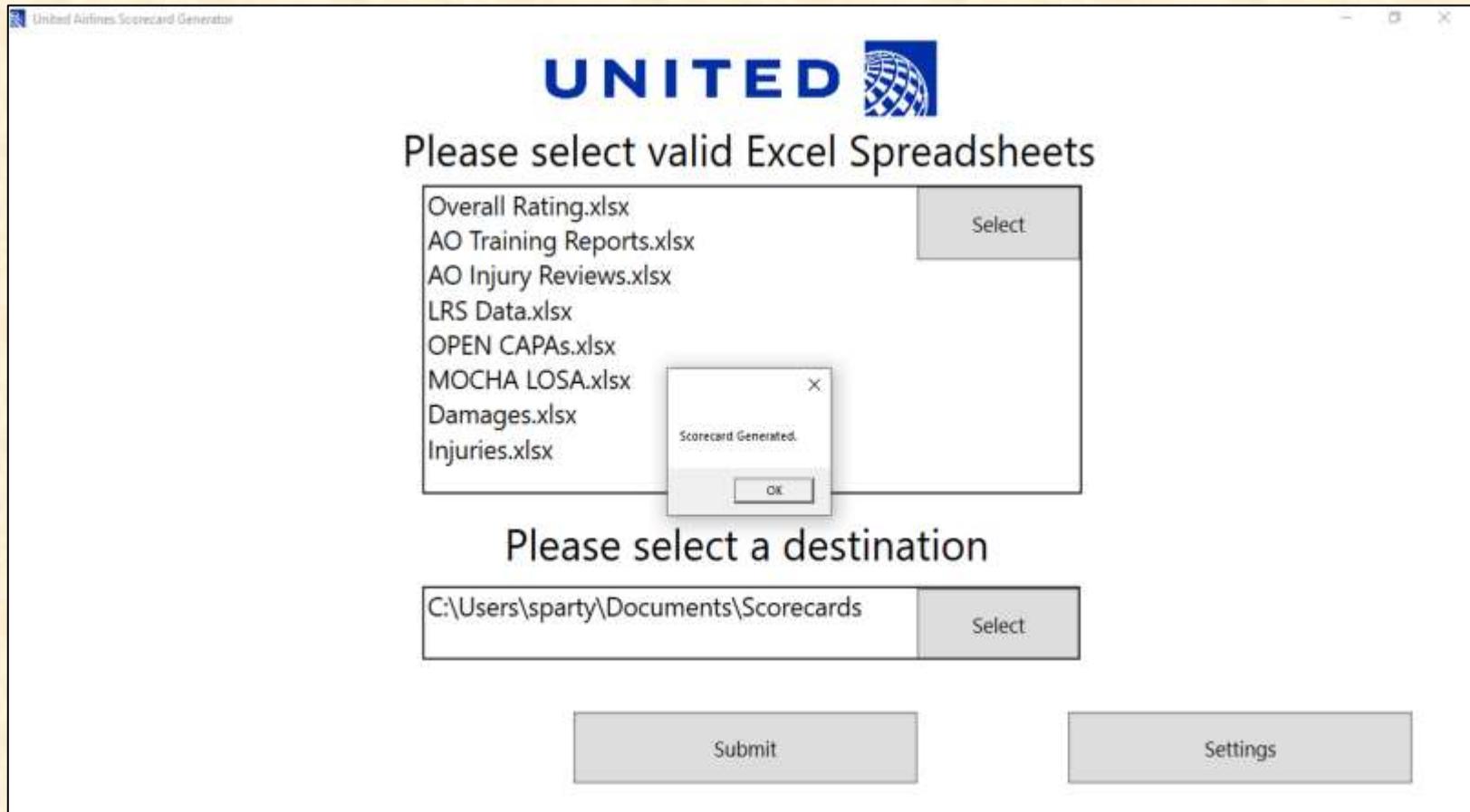
The screenshot shows a window titled "Settings" with the following layout:

- Overall Rating Dataset**
Current File Name:
Overall Rating
- Training Dataset**
Current File Name:
AO Training
- Multiple Injury Dataset**
Current File Name:
Multiple Injury
- LRS Dataset**
Current File Name:
LRS Stats
- CAPA Dataset**
Current File Name:
Open CAPA
- MOCHA LOSA Dataset**
Current File Name:
MOCHA LOSA
- Injuries Dataset**
Current File Name:
Injuries
- Damages Dataset**
Current File Name:
Damages

At the bottom of the window, there are three buttons: "Back", "Clear", and "Submit".



Screen Mockup: Scorecard is Made



Screen Mockup: Scorecard

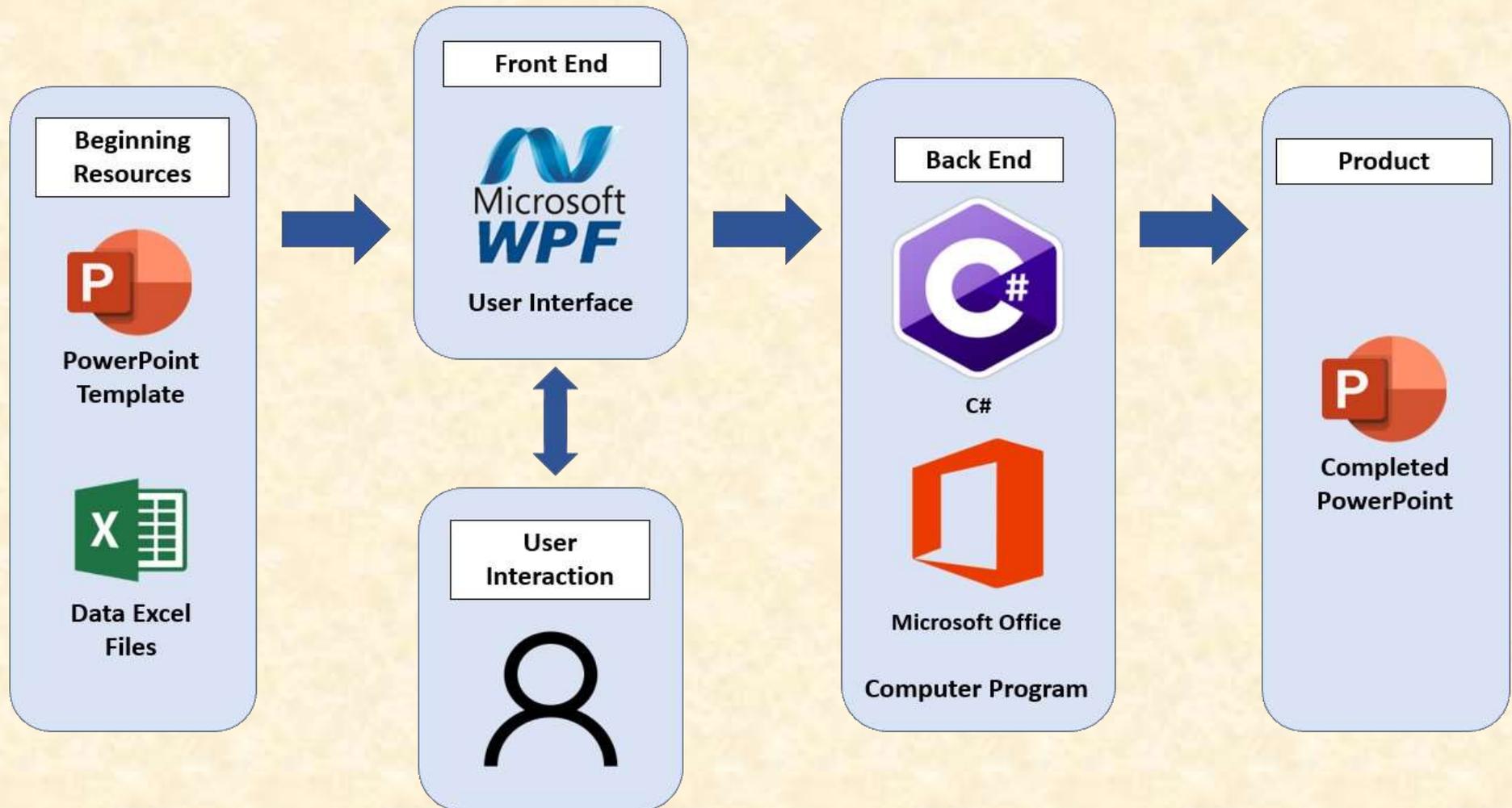


Technical Specifications

- C#
- .NET Framework 4.7.2
- Microsoft Office Interop
 - Excel
 - PowerPoint
- Windows Presentation Foundation (WPF)
- Multiple threads for better performance



System Architecture



System Components

- Hardware Platforms
 - Windows 10
- Software Platforms / Technologies
 - C# / .NET Framework 4.7.2
 - Visual Studio 2022
 - Windows Presentation Foundation (WPF)
 - Microsoft Office Interop



Risks

- Data fetching
 - Description: Data source may be different formats.
 - Mitigation: Provide template for data input, check data source format by scheme.
- Generating scorecard layout dynamically
 - Description: The best outcome layout will be different by different source data.
 - Mitigation: Abstract outcome into different categories, create universal one for rest which may not be best.
- Handling data errors
 - Description: Find error data from important unregular data that show the real error in the result.
 - Mitigation: Work with client to define possible area of data, alert abnormal data in possible area when generate outcome.



Questions?

?

?

?

?

?

?

?

?

?

