FUTURE-ORIENTED BENCHMARKING THROUGH SOCIAL MEDIA ANALYSIS

Software Requirements Specifications

Team Members:

Claudino Alves, alvesc2014@my.fit.edu

Harshil Haumeer, hhaumeer2014@my.fit.edu

Faculty Sponsor:

Dr. Philip Chan, pkc@fit.edu

Department of Computer Science

Project Client:

Dr. Richard Griffith, griffith@fit.edu

Department of Psychology

Project Website:

https://fobmsm.github.io/fobm.github.io/

Table of Contents

1. Introduction

1.1 Purpose

The purpose of this document is to provide a detailed description of the requirements for the *Future-Oriented Benchmarking Through Social Media Analysis* web-based system. This document will illustrate the development of the system as well as the system's intended features. It will also provide a description of the external interfaces, performance and reliability along with illustrating possible constraints of the system. This document is intended for the project's client, the project sponsor and all individuals participating in the development of this web-based system.

1.2 Scope

FOBM is a web-based system that will provide businesses with a live web-scrapping tool to extract their customers' reviews from different social media websites. Similar to other web platforms, FOBM will provide the user with a general overview of their performance based on customers' reviews.

Moreover, FOBM will also comprise of a 'Drill-down' tool, which will allow businesses further analysis of the reviews to get to the root of a particular review. For example, a particular business receiving negative reviews on one of its services, could drill down to that specific service and view the feedback from those reviews. This will help business to understand the root cause of customer's dissatisfaction and thus they could improve the areas where they are underperforming.

In addition to these features, FOBM will also consist of a Benchmarking tool, which will allow businesses to compare their performance to that of their competitors. This will help a particular business see where it is performing well and where it is underperforming and hence improve its weaknesses to provide better services and increase customer satisfaction. FOBM will also provide its users with a Trend Analysis tool that will help them predict future trends and

identify possible issues. This feature will allow businesses to take proactive actions on those future trends to prevent them from being an actual problem.

1.3 Definitions, Acronyms, and Abbreviations

1.4 References

IEEE Computer Society, "IEEE Std 830-1998, IEEE Recommended Practice for Software Requirements Specifications", October 20, 1998

1.5 Overview

2. Overall Description

This section provides a broad overview of the system. It gives details about the dependency of the system, and its interfaces, such as user, software, hardware and communication interfaces. This section also provides a summary of the main features of the system as well as states the educational and technical background requirements for intended users. Constraints limiting the developers' options and affecting the final product are also listed in this section.

2.1 Product Perspective

FOBM is a new and self-contained web-based system. All the intended features of the system will be available on the website, which is the main user interface. The system will use its automated web scrapping algorithm to retrieve requested data from selected social media platforms. The system will then make use of IBM Watson to analyze the content of the data and the text classification algorithm will separate the content according to the categories it belongs to. For instance, the system will have a predefined hierarchy of different categories. In this case, it is the 7 world-class factors of an airport which includes airport architecture and pleasing ambiance, ease of navigation, speed through the airport, customer-centric environment, technology throughout the experience, transportation and connectivity and basic customer needs.

The user will then have a graphical illustration of these reviews and using the drill-down feature, the user will be able to analyze those reviews. The user will then have the option to make use of the benchmarking analysis tool which will provide illustrations of the company’s performance as oppose to its respective competitors.

Using the trend analyzer tool, future-based trend will also be generated and available in graphical illustrations. All the data will be saved on a database, so the user won’t have to generate the same data for future references.

2.2 Product Functions

The system will allow businesses to register for an account on the website. The account will give them access to all the features of the website namely:

- Live web scrapping
- View reviews available in graphical illustrations
- Use the drill-down feature to analyze the sub-content/root of reviews
- Use benchmarking tool to see the company's performance compared to respective competitors
- Use of trend-analyzer to generate future-oriented trends.

2.3 User Characteristics

The intended user of this system is administrators of a particular organization, in this case managers for customer service of a particular airport. User do not require any specific training or technical expertise to use the system. The minimum requirement is to be computer literate which allows them to do basic operations on a computer such as registering an account, logging in, saving data, etc. Users will only have access to the web-portal and rights to modify any feature will be restricted.

2.4 Constraints

Given that the system will make use of a web scrapping feature, retrieving data from different social media platforms, generating the results which will undergo sentiment analysis and text classification process can take some time. Therefore, having a high-speed internet connection is very important.

Besides, depending on the amount of data being requested from social media platforms, since the data will be stored on a database, memory availability could be a constraint to the system.

3. Specific Requirements

3.1 External Interface Requirements

3.1.1 User Interface

All user will see the option to sign in or register, as shown in Figure 1 below when they first access the website.

Figure 1

After signing in or registering their organization, users will have access to the different features of the website, the first one being selecting sources where they want their reviews to be scrapped from as shown in figure 2 below:

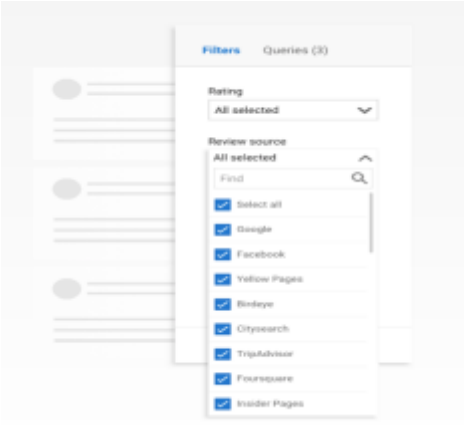

Figure 2

After selecting desired sources, the system will generate a graph displaying a general overview on how the business is performing in its different factors and services. An example of the graph is shown in Figure 3 below:

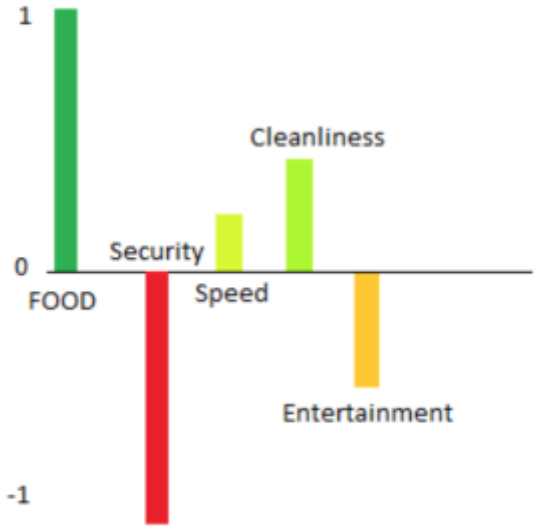

Figure 3

The user will then have the ability to select any specific section of the services provides, such as Food or security, etc. which he would like to view and a more detailed graphical illustration will be generated displaying contents on that specific service over a time frame. For example, selecting Food services will generate another graph, which will look like the one in Figure 4 below:

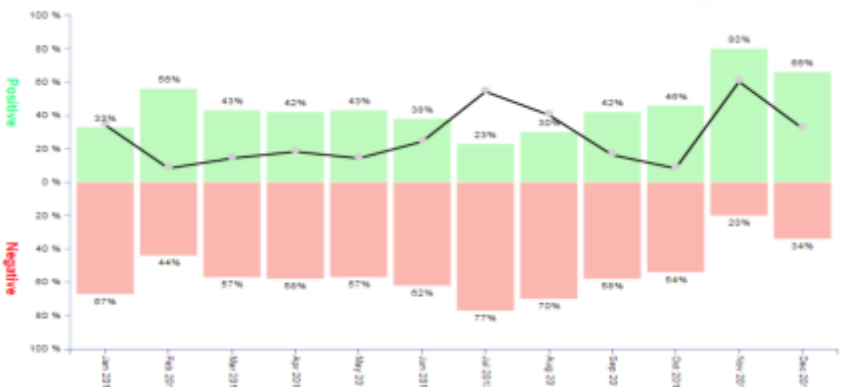

Figure 4

Moreover, the system will allow users to further expand these data, for example if a user would like to see why there was more negative reviews on a particular month, the drill-down tool will allow the user to have access to the root of those reviews, such as seeing the actual comments of customers and which part of the food services for example is being targeted as a poor service, which could for instance be hygiene, quality, taste, price etc.

Besides the analysis tools and features illustrated above, the system will also allow business to use the benchmarking tool which will help them see how they are performing as compared to related competitors. This data will be represented through graphical representations. For instance, if Orlando International Airport (MCO) wish to see how it is performing as compared to leading competitors, a graph like Figure 5 will be generated.

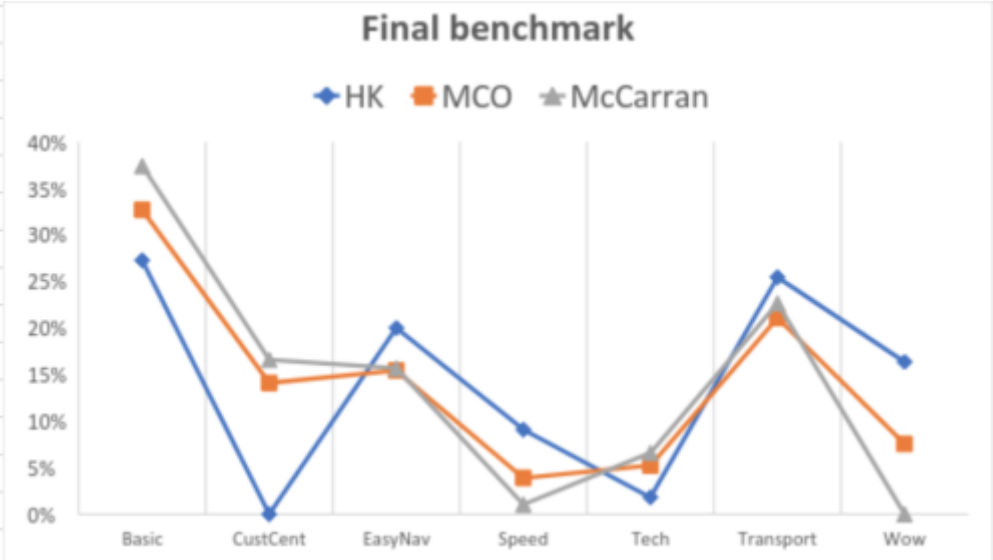

Figure 5

The website will also allow users to generate future-oriented trends which will help them see where they will most likely be underperforming and through the analysis tool available, they could see the root cause for underperformance and thus proactively work in the issue to prevent it from becoming an actual problem. A possible illustration of the graphical illustration of the trend analyzer is shown in Figure 6 below:

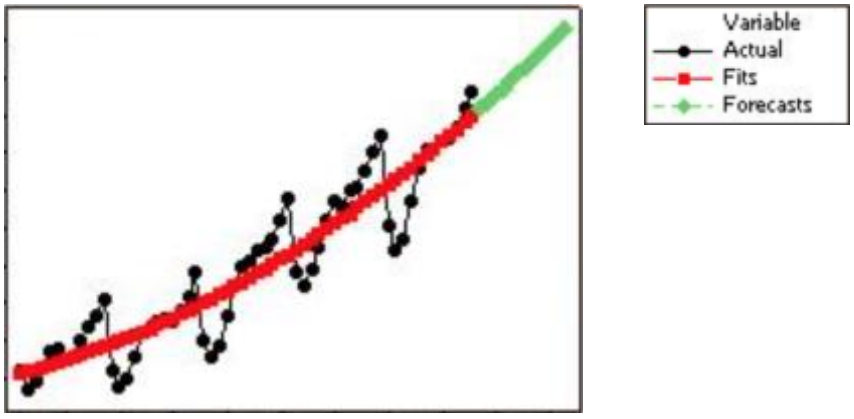

Figure 6

3.1.2 Hardware Interface

The system does not have any direct hardware interface since FOBM is web-based.

3.1.3 Software Interface

The main external software that will be used is IBM Watson which will be implemented in the system to perform sentiment analysis.

3.2 Functional Requirements

ID: FR1

TITLE: User Registration

DESCRIPTION: The user should be able to register for a new account using a valid email address, the name of the organization, a phone number, and a password.

RATIONALE: To allow user to use the tools and feature of the website

DEPENDENCIES: None

ID: FR2

TITLE: User Log in

DESCRIPTION: The user should be able to log in on the website using the respective email address and password

RATIONALE: To allow user to use the tools and feature of the website.

DEPENDENCIES: FR1

CONFLICTS: None

ID: FR3

TITLE: Forgot Password

DESCRIPTION: The user should be able to reset the password in case the user forgot the password. A reset link will be sent to the email address provided on registration.

RATIONALE: To allow user to reset a forgotten password to gain access back to the website

DEPENDENCIES: FR2

CONFLICTS: None

ID: FR4

TITLE: Select Source

DESCRIPTION: The user should be able to select which social platforms the reviews would be scrapped from

RATIONALE: To allow user to select the reviews from desired websites for analysis.

DEPENDENCIES: None

CONFLICTS: None

ID: FR5

TITLE: Select Services

DESCRIPTION: The user should be able to select the specific services that he would like to focus on. For example, a user might want to see the company's performance in food services.

RATIONALE: To allow user to view data on specific services provided by the company

DEPENDENCIES: FR4

CONFLICTS: None

ID: FR6

TITLE: Drill-Down

DESCRIPTION: The user should be able to expand the graphical visualization to further analyze the data and see the root of reviews.

RATIONALE: To allow user to see the root of reviews and customers' comments

DEPENDENCIES: FR4, FR5

CONFLICTS: None

ID: FR7

TITLE: Benchmark

DESCRIPTION: The user should be able to use the benchmark tool to generate graphical illustrations of its performance in comparison to its specific competitors

RATIONALE: To allow user to use the benchmark analysis tool to generate results in graphical forms.

DEPENDENCIES: FR4

CONFLICTS: None

ID: FR8

TITLE: Trend Analyzer

DESCRIPTION: The user should be able to use the trend analysis tool which will generate graphical illustrations of past, present and future trends.

RATIONALE: To allow user to generate future-oriented trends which will help to identify issues in a particular business

DEPENDENCIES: FR4, FR7

CONFLICTS: None