University of Essex
Department of Mathematical Sciences

MA838: CAPSTONE PROJECT

A Data Analytics Approach to Fantasy Football Management

Reece Lance

1804752

Supervisor: **Dr Andrew Harrison**

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CHAPTER 1

Project Outline

For the following year, I intend to study 'A Data Analytics Approach to Fantasy Football Management'.

1.1 Description

This project will involve extensive research into the analytical side of football management, proving and disproving theories about the fantasy football game. I will use data analysis skills to collect, clean and interpret data from the Premier League, resulting in accurate predictions of the best teams and tactics to use throughout the game's course. The final product will be an application, with the main functionality of presenting the predictions in an effective way for the user to follow. The application will also include other features such as showing live scores, league tables and player rating systems, similar to the Premier League official website and phone application. It will also be made possible to sign into your Fantasy Premier League (FPL) account, to see your current team and any past statistics and history. The Capstone will consist of full documentation of my research findings, processes, data analysis, predictions and application creation and features.

1.2 Process

Following the steps of basic data analysis, I will begin by retrieving the raw data in the JSON format. Next, I will store and manage the data in Data Frames, splitting the data up where necessary. Then I will begin cleaning the data by ensuring there are no missing values, and that the data is in the correct data types. The data will then be analysed, and new data created in order to improve the predictions. Furthermore, the game rules will then be addressed, as the predictions must follow all of the rules and the scoring system to be effective. These predictions must then be integrated into Java to be used in the application. Moreover, in Java I will produce the application to present the results, including any additional features. Also in Java, I will create a login page in order for users with an FPL account to have access to their data and statistics. I will ensure that the account details are secure. To prove the success of the prediction and application, I will have users test the application and assess some markers (these will be decided later). To test the prediction accuracy, we can test the program from the start of the season and assess how accurate the predictions are.

1.3 Languages and Libraries

The back-end of the program will be written in Python, using some external libraries; the front-end of the application will be written in Java. The data that will be used is from the Fantasy Premier League API and will be retieved using 'requests', a Python HTTP library. When the data is retrieved, a local version of the data will be saved or updated for when the API cannot be accessed; this will be in a JSON file. To clean and manipulate the data I will use 'Pandas', and for the analysis, 'matplotlib'. The application's GUI (Graphical User Interface) will be written using the Java library 'Swing', with the help of the 'Swing Form Designer' in 'IntelliJ IDEA'.