

TY. B. Tech.

CS 303: Software Engineering Laboratory

Assignment No: 1

Player Value Analyser

Project Statement of Work

14-08-2017

Version 1.0

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Academic Year: 2017~18

Semester: I

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1. TITLE

Player Value Analyser is a tool for football teams to decide the value of players in the open transfer market.

1. This is a system that will predict a player's value depending on his statistics, previous records and other dependable factors. The system's database will consist of all the top footballers that are playing in the world and will provide a cutting-edge analysis of the player's condition and value to a team.
2. Football teams around the world are always in search of tools that can bring technology to the game and help them in decision making. A system such as this will be a very useful tool considering the recent state of bewilderment and unrealistic transfer fees in the global football market which lead to unsustainable situations for clubs.

2. BACKGROUND

The competitive football industry is a multi-million-dollar industry. The clubs are worth billions of dollars and players are the clubs most valuable assets. Every season the clubs have a transfer season wherein they decide to buy and sell players from/to other clubs. The Player Value Analyser will prove to be an effective tool to give the club an idea about the player's worth which will help them spend their money wisely.

- 2.1 The mandate of the football teams is to entertain people by providing them with the best quality of football while also keeping a good financial structure as to make profits and maintain sustainability.
- 2.2 Football agents, directors and chairmen of football clubs, players and also new agencies can make use of this product. The service will be open to all while there may be a few premium features which can be accessed only upon paying for those services.
- 2.3 The product will use web engineering process to project the output.
- 2.4 The need for this service has been highlighted recently. The money that is getting into football needs to be properly regulated as to ensure that it is wisely spent. The football leagues are even thinking of making certain guidelines related to players values and this tool will be of great use in that case.
- 2.5 The Football leagues in the world have certain clubs with each having an owner. These clubs buy players to improve their quality and they have to pay a price for such players.
- 2.6 The organisation needs a third-party contractor to satisfy the requirement first of all to guarantee a fair and unbiased approach. This is a tool which means that it does not lie in the organisation's domain i.e. Sports and entertainment.

3. OBJECTIVE

The objective of this proposal is to provide a tool to generate fair value of a player. For calculating this fair value, the player's attributes, his performances in earlier matches, the contract years he has on his current contract, and his overall gameplay will be considered. This will in-turn give a fair idea about how much the player will be worth to the club, and how much a club should spend on him in ideal situations.

- 1.** As a part of this proposal, we hope to achieve development of a system that predicts fair player value given his attributes and other data, so as to help make proper decisions for the club.
- 2.** The system shall be open source and can be used by multiple users wherein there will be certain premium features available to only licensed users.
- 3.** In the process of building this system, no external contractors will be involved.

4. DEFINITIONS AND APPLICABLE DOCUMENTS

Transfer:

In professional football, a transfer is the action taken whenever a player under contract moves between clubs. It refers to the transferring of a player's registration from one association football club to another. In general, the players can only be transferred during a transfer window and according to the rules set by a governing body. Usually some sort of compensation is paid for the player's rights, which is known as a transfer fee. When a player moves from one club to another, their old contract is terminated and they negotiate a new one with the club they are moving to, unlike in American, Canadian and Australian sports, where teams essentially trade existing player contracts.

Transfer market:

The transfer market is the arena in which football players are available for transfer to clubs. The transfer market consists of a transfer list consisting of players available for transfer, and also the money moving between clubs. For example, a club may be described as having "money to spend on the transfer market" or the market may be described in similar ways to the stock market.

Transfer Request:

A player may make a "transfer request," to leave their club before the end of their contract. In this case, the player is publicly stating his desire to move, and encouraging other clubs to make an offer for him. Due to the public nature of transfer requests, they are often being used by players to air their grievances, such as frustration over contract negotiations or a clash of personality with the manager.

Regression:

In statistical modelling, regression analysis is a statistical process for estimating the relationships among variables. It includes many techniques for modelling and analysing several variables, when the focus is on the relationship between a dependent variable and one or more independent variables (or 'predictors'). More specifically, regression analysis helps one understand how the typical value of the dependent variable (or 'criterion variable') changes when any one of the independent variables is varied, while the other independent variables are held fixed. Most commonly, regression analysis estimates the conditional expectation of the dependent variable given the independent variables – that is, the average value of the dependent variable when the independent variables are fixed.

Documents:

- 1) <http://www.remigz.com/blog/prediction-transfer-values/>
- 2) <https://www.pro-football-reference.com/blog/index37a8.html>
- 3) <http://football-data.org/>

5. BUSINESS AND TECHNICAL ENVIRONMENT

The System requires the following Business and Technical Environment to successfully commence in the stipulated time and resources.

1.1. The hours of operation will be independent as that of the organisation with weekly feedback given during the reporting time.

1.1.1. The team will work Monday to Friday, 2 hours per day.

- This time will be utilised to work on completing the project documentation which will take up a major role in the initial weeks of the project.
- Later weeks will have more time invested in project planning and implementation with the documents having a lighter format.
- Time will be evenly utilised for Documentation, Planning , Execution, Testing & Debugging.

1.1.2. Further work can be completed on weekends depending on the team/member's convenience.

1.2. The system will be delivered in two formats either as a web engineered product or as a downloadable computer system. In each case the system should not utilise a very high specification which will make the system difficult to run on certain systems.

1.2.1. Internet connection will be required for the smooth functioning of the system. (in case of web system)

1.2.2. RAM greater than 8GB (Minimum Requirement)

1.2.3. Libraries with open source licenses will be used.

6. DESCRIPTION AND SCOPE OF WORK

The work that is to be done under '**Player Value Analyser**' involves multiple steps:

- 1.** Acquiring statistical data about players from public data sources.
- 2.** Data Cleaning and formatting according to needs.
- 3.** Data visualization in order to understand the domain and be able to use domain specific knowledge.
- 4.** Feature engineering so as to create useful features from the data.
- 5.** Regression analysis.
- 6.** Developing a web-based front-end so as to ease the usage.

'**Player Value Analyser**' will be made to only provide fair value of the player considering the player's performance. It will provide a good estimate of the talent the player will bring to the club in terms of money. It will not consider any personal relations of the player with the clubs and also will not consider other abstract notions about the player and internal club issues. As such, the analyser can't be expected to predict the exact transfer value for a player, especially for high end transfers that involve other features that aren't going to be considered here.

The organisation reserves the right to amend the Scope of Work as the situation permits depending on the feasibility and limitations of the scope.

7. DELIVERABLES

The system is in the initial stage of development and some of the deliverables may vary as the system continues to develop into a product. Amongst the contract deliverables are the core concepts of the project which will not change in any case. The system will stay true to its vision and the only changes may be seen are the ones in the User Interface.

These are some of the deliverables that team can outline at this stage of development. Each stage has its own challenges and will be given apt importance by the contractor.

No.	Details
1	Statement of Work
2	Feature Set
3	SRS Document
4	Feasibility Study and Project Plan using AGILE
5	Sprint level planning activity
6	Sprint Plan and Sprint Design
7	Software Configuration Management Plan (SCMP)
8	Sprint Execution
9	Sprint Review and Sign-offs

8. APPROACH AND METHODOLOGY

1. Preparing proper documentation and getting the views of the team and organisation by creating proper SOW, Feature Set Document and SRS Document.
2. A Feasibility Study will be performed depending on the features discussed between the team and organisation and a Project Plan will be drawn up.
3. The Project will follow the Agile model and all the necessary steps will be taken as per industry standards.
4. A Sprint Execution will be carried out in phases to finish the project in the stipulated time, this will be done with the help of a Sprint Design and Plan.
5. A Software Configuration Management Plan (SCMP) will be presented to ensure consistency of the product's performance, functional, and physical attributes with its requirements, design, and operational information throughout its life.
6. At the end of each sprint, the team will have produced a coded, tested and usable piece of software.
7. The System will be reviewed by the concerned organisation and all the issues will be presented to the team.
8. Upon resolution of these issues a final and formal sign-off will be suggested.