

T.Y. B. Tech.

CS 303: Software Engineering Laboratory

Assignment No: 2

Player Value Analyser

Project Feature Set Description

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Version 1.0

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Table of Contents

Sr. No.	Title	Page
1	Project Vision	3
2	Project Mission	3
3	Project Scope	4
4	Goals	5
5	Feature Set	16
6	Stakeholders	17
7	Acceptance Criteria	18

1. PROJECT VISION

To provide the estimate market value of the player to be sold/bought calculated from the players statistics over the last season so that there is no inflation in player prices in the transfer market.

2. PROJECT MISSION

The Mission Statement summarises the aim of this project and what it is trying to achieve. This is our Project Mission:

- 2.1. The Player Value Analyser is a tool mainly for football (soccer) teams to predict the worth of a player depending on the statistical and other non-statistical data. The software will be presented to the public in the form of a website or a web-distributed application.
- 2.2. The Player Value Analyser will provide a figure for each player that a person using the application wishes to know of. The focus will be on pre-existing players in world of football but also to predict a new player's worth when there is a sense of uncertainty with the valuation.
- 2.3. The software wishes to bring a sense of balance in the current football market to preserve the essence of the game. The team has undertaken this project as we are admirers of the football game and are keen to bring our technical viewpoint to the world of sports and entertainment.

3. PROJECT SCOPE

‘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. 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.

These are our project goals as defined by the team:

- 4.1. Building Player Profiles.
- 4.2. Classifying Players into appropriate categories.
- 4.3. Extracting Player Requirements from the input database according to need.
- 4.4. Process the appropriate queries according to customer request.
- 4.5. Display Player Stats and other data used to analyse the value.
- 4.6. Rate the player and display his calculated value.
- 4.7. Determine the System’s accuracy and integrate the feedback.

4. GOALS

Goal-ID	Priority	Factors Addressed
1	1	Build Player Profile
Target Audience		Customers
Driver		To make players profile
Description		Populating the whole database with player detail
Response		The goal is to extract data from web scraping and other sources.
Open Issues		Discussion and Revision

Goal 1 Description:

SPECIFIC TEST				
Is 'What' identifiable?	Is the 'Why' clear?	Can 'Who' be identified?	'Where' will it be performed?	'Which' resources are needed?
Collecting data of Players	To populate the whole database for future analyzing	The analyzing model will use this data	Software engineer's machines	Web scraping and simple data entry or using prepared data set

Goal 1 Description:

MEASURABLE TEST		
Is the end result quantifiable?	'Figure' of Measurement	Has the goal a clear end date/point?
It will be a database of enough player details to make good predictions	It can be measured on the basis of how many numbers of player's details are stored in the database	This is the initial step of database, so good amount of player's details is the end point of this goal

Goal 1 Description:

ATTAINABLE TEST			
What is your reaction to goal?	Does it feel realistic?	Is it overwhelming?	Do you find it motivating?
This is the most major or building block for the whole system	Web Scaping and data Collection can be done in fair amount of time	To some extent, if the system demands 10thousands player's details then this itself is a challenge	It is motivating because it is a main part of a system

Goal 1 Description:		
RELEVANT TEST		
Does it fit into the overall team / organization objective?	Taking overall fit is the timing appropriate?	Do you have sufficient resources / budget to succeed?
This forms the crucial part of the system and hence helps attain a problem that the organization faces	By using the sprint execution method, we can achieve this goal.	The resources we need should be served after the input stage. In terms of hardware requirements, team has enough resources

Goal 1 Description:		
TIME BOUND TEST		
Does it have a clear end date/point?	Is the focus clear so you can create an action plan?	Is its position on an Urgency/Importance grid clear?
This is the initial step of database, so good amount of player's details is the end point of this goal	The focus of this goal is clear: to populate the database. So, steps forward can be taken.	This is going to be base data for all new players. So this is the most important part of the system.

Goal-ID	Priority	Factors Addressed
2	2	Classify Players
Target Audience		Customers
Driver		To distinguish players
Description		Make groups in the database according to player's ability
Response		The goal is to divide the whole database according to classifications
Open Issues		Discussion and Revision

Goal 2 Description:				
SPECIFIC TEST				
Is 'What' identifiable?	Is the 'Why' clear?	Can 'Who' be identified?	'Where' will it be performed?	'Which' resources are needed?
Classifying players	To make better predictions and better transfer window experience	The analyzing model will use this data	Software engineer's machines	By using statistics tools will be divide the player's database

Goal 2 Description:		
MEASURABLE TEST		
Is the end result quantifiable?	'Figure' of Measurement	Has the goal a clear end date/point?
Make database distributed in parts according to the demand	It can be measured on the basis of how many classifications we do on the players	This goal will help in better predictions of future players

Goal 2 Description:			
ATTAINABLE TEST			
What is your reaction to goal?	Does it feel realistic?	Is it overwhelming?	Do you find it motivating?
This goal is the answer of how we will distinguish prices of different classes of player	It's realistic using some statistics tools we know	It is, as we have to experiment a lot of tools to classify data	It is motivating because If we don't implement this then we won't get the quality of result we want

Goal 2 Description:		
RELEVANT TEST		
Does it fit into the overall team / organization objective?	Taking overall fit is the timing appropriate?	Do you have sufficient resources / budget to succeed?
This forms the crucial part of the system and hence helps attain a problem that the organization faces	By using the sprint execution method, we can achieve this goal.	The resources we need should be served after the input stage. In terms of hardware requirements, team has enough resources

Goal 2 Description:		
TIME BOUND TEST		
Does it have a clear end date/point?	Is the focus clear so you can create an action plan?	Is its position on an Urgency/Importance grid clear?
If we can classify all the players in some categories then we have completed the goal	The focus of this goal to classify but we need to do lots of experiments	It's really important because if we don't do it then we can get garbage results for player's value

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Goal-ID	Priority	Factors Addressed
3	3	Process Player Profiles
Target Audience		Customers
Driver		To get information from player profiles
Description		Statistical learning techniques will be applied to process and learn information from dataset of player profiles
Response		The goal is to extract usable information from the data.
Open Issues		Discussion and Revision

Goal 3 Description:

SPECIFIC TEST				
Is 'What' identifiable?	Is the 'Why' clear?	Can 'Who' be identified?	'Where' will it be performed?	'Which' resources are needed?
Applying statistical techniques.	To learn from the data to generalize on what attributes from the profile contribute to player value.	The user who wants to know the value of a player will utilize this.	It will be performed beforehand on development machines.	The player profiles collected in the input stage and some computer hardware to do processing.

Goal 3 Description:

MEASURABLE TEST		
Is the end result quantifiable?	'Figure' of Measurement	Has the goal a clear end date/point?
It will be a trained statistical model of players and their values.	It can be measured on the basis of how well it performs on different player profiles.	It would be an incremental process since any new player profiles should also be processed.

Goal 3 Description:

ATTAINABLE TEST			
What is your reaction to goal?	Does it feel realistic?	Is it overwhelming?	Do you find it motivating?
This will be one of the main goals to be achieved in this system.	Statistics can be very useful in such scenarios so it is not too far-fetched.	To some extent, but it is not too far-fetched as data about a player should have a relation to his value.	It is motivating because it is a main part of a system that aims to solve a real-world problem.

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Goal 3 Description:		
RELEVANT TEST		
Does it fit into the overall team / organization objective?	Taking overall fit is the timing appropriate?	Do you have sufficient resources / budget to succeed?
This forms the crucial part of the system and hence helps attain a problem that the organization faces	By using the sprint execution method, we can achieve this goal.	The resources we need should be served after the input stage. In terms of hardware requirements, team has enough resources

Goal 3 Description:		
TIME BOUND TEST		
Does it have a clear end date/point?	Is the focus clear so you can create an action plan?	Is its position on an Urgency/Importance grid clear?
Although the goal is achieved once we freeze this process and produce a system, it should be used even when the system is in production.	The focus of this goal is clear: to produce a statistical model. So steps forward can be taken.	In the initial stages, it would be less important as input goals need to be cleared first, after that it would have medium to high priority.

Goal-ID	Priority	Factors Addressed
4	3	Extract Player Requirements
Target Audience		Customers
Driver		To provide a way to handle user input.
Description		Here, name or some identification of player and/or a player profile will be accepted from user and will be processed
Response		The goal is to perform operations on a given profile in order to generate value for it.
Open Issues		Discussion and Revision

Goal 4 Description:				
SPECIFIC TEST				
Is 'What' identifiable?	Is the 'Why' clear?	Can 'Who' be identified?	'Where' will it be performed?	'Which' resources are needed?
Handling user input	To predict a player's value and present it.	The user who wants to know the value of a player will utilize this.	It will be performed on client/user machines.	The player profiles collected in the input stage and some computer hardware to do processing. Also processed statistical model will be required.

Goal 4 Description:		
MEASURABLE TEST		
Is the end result quantifiable?	'Figure' of Measurement	Has the goal a clear end date/point?
It will be a prediction of values.	It can be measured on the basis of how well it performs on different player profiles.	This goal must be accomplished before production.

Goal 4 Description:			
ATTAINABLE TEST			
What is your reaction to goal?	Does it feel realistic?	Is it overwhelming?	Do you find it motivating?
This will be one of the main goals to be achieved in this system.	Once the earlier goal is achieved, it is very realistic.	Its feasibility is dependent on how well the model functions.	It is motivating because it is a main part of a system that aims to solve a valid problem.

Goal 4 Description:		
RELEVANT TEST		
Does it fit into the overall team / organization objective?	Taking overall fit is the timing appropriate?	Do you have sufficient resources / budget to succeed?
This forms the crucial part of the system that creates functionality to handle input.	By using the sprint execution method, we can achieve this goal.	The resources we need should be served after the input stage and the previous processing stage. In terms of hardware requirements, team has enough resources

Goal 4 Description:		
TIME BOUND TEST		
Does it have a clear end date/point?	Is the focus clear so you can create an action plan?	Is its position on an Urgency/Importance grid clear?
The goal will need to be achieved before the deliverable product is produced.	The focus of this goal is clear: to handle user input programmatically. So, steps forward can be taken.	In the initial stages, it would be less important as input goals need to be cleared first, after that it would have medium to high priority.

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Goal-ID	Priority	Factors Addressed
5	1	Demonstrate Player Statistics
Target Audience		Customers
Driver		
Description		The statistics of the player will be displayed so as the teams have an idea of what the player is capable of.
Response		
Open Issues		Discussion and Revision

Goal 5 Description:				
SPECIFIC TEST				
Is 'What' identifiable?	Is the 'Why' clear?	Can 'Who' be identified?	'Where' will it be performed?	'Which' resources are needed?
Display Player Statistics	To give an idea about the players capability.	Customer who wants to know about the player.	It will be performed on client/user machines.	The player profiles collected in the input stage.

Goal 5 Description:		
MEASURABLE TEST		
Is the end result quantifiable?	'Figure' of Measurement	Has the goal a clear end date/point?
The end result will be a collection of statistics accumulated over a period of time.	The figure of measurement is the accuracy of the stats.	The goal completion will go hand in hand with the project completion.

Goal 5 Description:			
ATTAINABLE TEST			
What is your reaction to goal?	Does it feel realistic?	Is it overwhelming?	Do you find it motivating?
The goal is achievable because statistics are formed based on the performance of the player.	Yes, because it is based on the performance of the player.	The task has a lot of dependencies and will be tedious.	Yes, as teams need to know about the players.

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Goal 5 Description:		
RELEVANT TEST		
Does it fit into the overall team / organization objective?	Taking overall fit is the timing appropriate?	Do you have sufficient resources / budget to succeed?
Yes, as the statistics are important to know about the on-field qualities of the player.	The timing will be a little short as the data has to be observed over a period of time even after project completion.	Yes, as the statistics only have to be displayed.

Goal 5 Description:		
TIME BOUND TEST		
Does it have a clear end date/point?	Is the focus clear so you can create an action plan?	Is its position on an Urgency/Importance grid clear?
The goal is achieved when the statistics are displayed to the user.	The focus is clear: to provide customers the player statistics.	Yes. It is not very high on priority because it only has to display the statistics.

Goal-ID	Priority	Factors Addressed
6	1	Estimate Player Value
Target Audience		Customers
Driver		
Description		Depending on the statistics an estimate of the player value will be provided
Response		
Open Issues		Discussion and Revision

Goal 6 Description:				
SPECIFIC TEST				
Is 'What' identifiable?	Is the 'Why' clear?	Can 'Who' be identified?	'Where' will it be performed?	'Which' resources are needed?
Display Estimated player value	To give an idea about the player's market value.	Teams who want to buy the player.	It will be performed on client/user machines.	The player profiles collected in the input stage.

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Goal 6 Description:		
MEASURABLE TEST		
Is the end result quantifiable?	'Figure' of Measurement	Has the goal a clear end date/point?
The end result will be fixed values and it will directly impact the success of the project.	The player value be estimated taking into consideration all the statistics.	The goal has a clear end point but the process will have to be constantly monitored and updated.

Goal 6 Description:			
ATTAINABLE TEST			
What is your reaction to goal?	Does it feel realistic?	Is it overwhelming?	Do you find it motivating?
It is very much achievable as the statistics are available.	Yes, because it is based on the performance and statistics of the player.	The task plays an important role in the success of the project aim.	Yes, as teams need to know about the player's market value.

Goal 6 Description:		
RELEVANT TEST		
Does it fit into the overall team / organization objective?	Taking overall fit is the timing appropriate?	Do you have sufficient resources / budget to succeed?
Yes, as the market value is important to know if the team can afford to buy the player.	The timing will be a little short as the data has to be observed over a period of time even after project completion.	Yes, as it only has to display a value.

Goal 6 Description:		
TIME BOUND TEST		
Does it have a clear end date/point?	Is the focus clear so you can create an action plan?	Is its position on an Urgency/Importance grid clear?
The goal is achieved when the market value is displayed to the user.	The focus is clear: to provide customers an estimated value of the player based on the player's statistics.	Yes. It is high on priority because it is necessary for the teams to know the value.

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Goal-ID	Priority	Factors Addressed
7	2	Assess Feedback
Target Audience		Customers
Driver Description		To make the model better using feedback Here, the player profile which has predetermined value can be used and we can see how well the model performs on it.
Response		The goal is to provide a way for feedback to affect the model for improvement.
Open Issues		Discussion and Revision

Goal 7 Description:

SPECIFIC TEST				
Is 'What' identifiable?	Is the 'Why' clear?	Can 'Who' be identified?	'Where' will it be performed?	'Which' resources are needed?
Feedback mechanism	To correct and cross-validate the model	It can be done by the engineers and the user as well, because any new input from user can also generate feedback.	It will be performed on development machines during development of the system and on client/user machines later.	The player profiles collected in the input stage and some computer hardware to do processing. Also processed statistical model will be required.

Goal 7 Description:

MEASURABLE TEST		
Is the end result quantifiable?	'Figure' of Measurement	Has the goal a clear end date/point?
It is a qualitative result, as an improvement in predictions. It can be measured by comparing the earlier predictions with new predictions.	It can be measured on the basis of how well it performs on different player profiles after feedback.	This goal must be accomplished before production.

Goal 7 Description:

ATTAINABLE TEST			
What is your reaction to goal?	Does it feel realistic?	Is it overwhelming?	Do you find it motivating?
This will be one of the goals to be achieved in this system to improve from what we have achieved.	Once the earlier goal is achieved, it is feasible.	It is plausible considering that we have a prediction and we can clearly create a way to feedback.	It is motivating because it is a main part of a system that aims to solve a valid problem.

Goal 7 Description:		
RELEVANT TEST		
Does it fit into the overall team / organization objective?	Taking overall fit is the timing appropriate?	Do you have sufficient resources / budget to succeed?
This forms the part of this system that handles feedback mechanism., which will be a helpful addition.	The timing will be a little short as the data has to be observed over a period of time even after project completion.	The resources we need should be served after the input stage and the previous processing stage. In terms of hardware requirements, team has enough resources

Goal 7 Description:		
TIME BOUND TEST		
Does it have a clear end date/point?	Is the focus clear so you can create an action plan?	Is its position on an Urgency/Importance grid clear?
The goal will need to be achieved before the deliverable product is produced.	The focus of this goal is clear: to create a feedback mechanism. So steps forward can be taken.	In the initial stages, it would be less important as input goals need to be cleared first, after that it would have medium/high importance.

5. FEATURE SET

These are the features that make our product unique.

Feature-ID	Feature Description
1	Fair values that point to realistic player talent and worth.
2	Fast predictions of values, since model will be pre-trained
3	Stability because of using tested, peer-reviewed open-source libraries
4	Front-end that enables quick and useful operation
5	Portability since the proposed front end can be accessed on any platform.

6. STAKEHOLDERS

Stakeholder	Concerns	Quadrant	Strategy/ Benefits
Football Clubs	Ensuring proper handover of project to operations team	Minimal Effort	Communicate project specifications as required
Project Guide	Resource and scheduling constraints for production once project is transitioned to operations	Key Player	Solicit stakeholder as member of steering committee and obtain feedback on project planning. Frequent communication and addressing concerns are imperative
Concerned Department	Ensuring on time delivery of materials	Minimal Effort	Communicate project schedule and material requirements ahead of time to ensure delivery
General Mass User	Product performance must meet or exceed current product	Key Player	Communicate test results and performance specifications and obtain feedback on customer requirements or any changes. Provide frequent status reports and updates.
Design and Marketing teams	Concerns regarding resources to assist project team with product design	Keep Satisfied	Communicate applicable resource requirements early and ensure resources are released back to engineering when they're no longer required
Media Companies	Questions regarding design of product	Keep Informed	Allow technical staff to work with stakeholder to answer questions and address concerns and provide test results for validation

7. ACCEPTANCE CRITERIA

6.1. Since the model will be trained on a large data set of players, it will be able to generalise and predict values properly. The values predicted can be cross validated by querying for a player that has been followed by the club and its scouts and whose worth is known.

6.2. The Project Manager has set these tasks for achieving successful delivery of the project:

- a. As discussed earlier the objectives of the project have been discussed with the customer and these will be satisfied when delivering the project.
- b. The team's project manager will review the project before its handing over also an external group will be assigned to check that the team has stayed true to its promises.
- c. Any changes that the customer wishes after the product completion will be addressed in 1-2 weeks of the initial written application by the customer.
- d. The following is a deliverables acceptance document.

Item	Concerns	Accepted / Rejected
Vision Definition	Complexity	Accepted
Mission Definition	Relation with Deliverables	Accepted
Goals	Description and structure	Accepted
Feature Definitions	Readability for non-technical stakeholders	Accepted
Deliverables definition	Consistency	Accepted