

FIFA 19 SEARCH ENGINE

Anirudh Buchalli, Ashish Tomar, Ruthvik Arepalle, Sessa Sai Tumma

Purdue University, Department of Management, 403 W. State Street, West Lafayette, IN 47907
abuchall@purdue.edu; tomar0@purdue.edu; rarepall@purdue.edu; tumma@purdue.edu

Abstract:

We are building R-Shiny app to help managers and scouts with tight budget constraints to evaluate each player thoroughly before making a final decision on whether or not to recruit a certain player.

In the competitive world of football with huge money at stake, and where big commercial players rule the scene one-sidedly, we aim to provide a platform for small budget scouts and aspiring managers to choose the best teams and also gives best chance to young talented players.

We have leveraged one of the most widely used statistical programming tool -R and its extensions in Shiny to solve our business problem. We've used all the requisite packages needed for data cleaning and modelling to obtain cardinal insights and quality results.

Business Problem Definition:

Comparing players in the world of football is an incredibly difficult endeavor because a player's worth is determined by the interplay of numerous variables. In order to sift through this clutter and identify the players that bring the most value to the table for their price, a comparison of significant variables that are useful in the determination of overall rating of a player, for a particular position, can prove to be immensely helpful.

Analytics Problem Definition:

Since European football has many leagues all over the world, each operating differently, we strongly feel that a summarization of the league's total value, number of players, number of local players etc., would help scouts and football managers of various teams, operating on tight budgets, identify and recruit the best talent.

A Linear regression model has been leveraged to determine the market value of a player based on various significant variables. Using prescriptive analytics, our Shiny App will be the 'go-to' thing for scouts as it'll help small teams in negotiating with other teams when purchasing a certain player.

Data:

The dataset for the app is the Fifa-2019 database about 17981 contract players of different nationalities across 5 international leagues. There are 74 attributes for each of these players which include both basic details like club, league, value etc. as well as the Fifa ratings for different field positions.

Methodology Selection:

We used a correlation matrix to identify variables that were correlated with each other before building a predictive model. In addition to this, we built dummy variables for the categorical variables. Furthermore, we used min-max normalization to scale the data so that the linear regression model would fit the model better. The implementation these descriptive analytical approaches was essential in building the linear regression model that would help us ultimately predict the transfer market price of players across the dataset.

R's Caret package with its extensive support when it comes to building machine learning models helped us build a robust linear regression model.

Model Building:

We applied a multiple linear regression model to estimate the transfer clause price for a given player. The price of few players in the transfer market might be overhyped, even when their attributes are actually not that great. This decision tool will help the manager or scout to evaluate whether the player is really worth the release clause price or not. In the case when the predicted transfer market value is greater than the actual value, player-recruiters could start negotiating for the player at the price that has been predicted by the model. On the contrary, when the model has predicted a larger value than the actual value, we can conclude that the player is undervalued and can be purchased. We built 2 models, one model without transforming the predictor variable and the other by doing log transformation of the predictor variable. The log transformation yielded better results on the test dataset by considering "RMSE" as the metric for assessing model performance.

Functionality:

The DSS has employed 'dashboardPage' function instead of 'fluidPage' since dashboardPage allows more efficient aggregation of different sections within the app. It also contains in-built functionalities for better display of sectional tabs of the app, instead of using only widgets throughout the app.

Given more time, we could have built an additional predictive model that would predict the overall rating of a player for different players.

GUI Design and Functionality:

The tool works without any known errors. It delivers on everything that was promised at the outset. It has more functionalities and is visually more appealing than the Shiny projects that were submitted last year, and this year.

Conclusion:

The FIFA 19 Search Engine is an important tool that scouts, and managers of various football teams can leverage to build competitive teams. The tool provides comprehensive answers to questions that player-recruiters often ask when assessing a player's value and quality.

References:

<https://www.kaggle.com/ekrembayar/fifa-19-dashboard-with-r-shiny>

Link for the app:

<https://escape-sequence.shinyapps.io/Rfinalproject/>