

# Predicting Player Rating in FIFA

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# Motivation and introduction of Report

## Data

## Preprocessing

## Data Visualization

## Smoothing Methods

## Linear Models

### Multiple Linear Regression

### LASSO Regression

### Ridge Regression

## Non-Linear Model

## GAM

### ###Tensor Producting Smoothing

## Regression Tree

## Statistical Conclusions

## Conclusion in the context of the problem

## Future Work

## Contribution

## Appendix

### Variables

- player\_name: The name of the player
- finishing: The accuracy of shots using foot, inside the penalty area
- dribbling: The ability to keep possession of the ball.
- ball\_control: The ability to keep your ball under your feet with velocity.
- reactions: How quickly a player responds a situation.
- stamina: Determine the rate at which a player will tire during a game.
- interceptions: The ability to intercept a pass where the ball is going and stop it from going there.

- marking: The ability to track and defend an opposing player.
- overall\_rating: The rating of the player based on all attributes.
- heading\_accuracy: The accuracy of the player either a pass or a shot by using head.
- curve: The ability to shoot the ball in a curved shape.
- acceleration: Increase in the rate of speed of a player.
- balance: The ability to maintain balance after a physical challenge.
- strength: The ability to win a physical challenge.
- positioning: The ability to read the game offensively, get into good positions, make effective runs, and avoid getting caught offside.
- standing\_tackle: The ability of the player to time standing tackles so that they win the ball rather than give away a foul.
- potential: A peak in overall rating that a player could reach.
- short\_passing: The ability to perform a pass in short distance.
- free\_kick\_accuracy: The accuracy of a direct free kick on goal. (Free kick: an unimpeded kick of the stationary ball awarded to one side as a penalty for a foul by the other side)
- sprint\_speed: The maximum speed over a short distance of a player.
- shot\_power: How hard can the player hit the ball when taking a shot at goal.
- long\_shots: The accuracy of shots from outside of the penalty area.
- vision: The player's awareness of the position of his team mates & opponents around him.
- sliding\_tackle: The ability of the player to time sliding tackles so that they win the ball rather than give away a foul.
- crossing: The accuracy of the player crosses the ball.
- volleys: The accuracy of a player strike or hit the ball at goal before it touches the ground.
- long\_passing: The ability to perform a long pass in the air and on the ground to his teammate.
- agility: The ability of a player to move or turn in game.
- jumping: The vertical distance of a player can jump from the ground.
- aggression: The frequency & aggression of jostling, tackling & slide tackling.
- penalties: The ability to take penalties.
- gk\_reflexes: The ability to react a ball in movement at goal by the goal keeper.

```
colnames(soccer.raw)
```

```
## [1] "player_name"      "overall_rating"    "potential"
## [4] "crossing"         "finishing"         "heading_accuracy"
## [7] "short_passing"    "volleys"           "dribbling"
## [10] "curve"           "free_kick_accuracy" "long_passing"
## [13] "ball_control"     "acceleration"      "sprint_speed"
## [16] "agility"         "reactions"         "balance"
## [19] "shot_power"      "jumping"           "stamina"
## [22] "strength"        "long_shots"        "aggression"
## [25] "interceptions"   "positioning"       "vision"
## [28] "penalties"       "marking"           "standing_tackle"
## [31] "sliding_tackle"  "gk_reflexes"
```

## R-Code

```
knitr::opts_chunk$set(echo = TRUE)
setwd("/Users/Raymond/Desktop/Raymond Tan/HW/4B/STAT444/soccer-rating-prediction/data")
soccer.raw <- read.table("rating_potential.csv", sep = " ", na.strings = "NA")
library(glmnet)
colnames(soccer.raw)
summary(cars)
plot(pressure)
```

## R Markdown

This is an R Markdown document. Markdown is a simple formatting syntax for authoring HTML, PDF, and MS Word documents. For more details on using R Markdown see <http://rmarkdown.rstudio.com>.

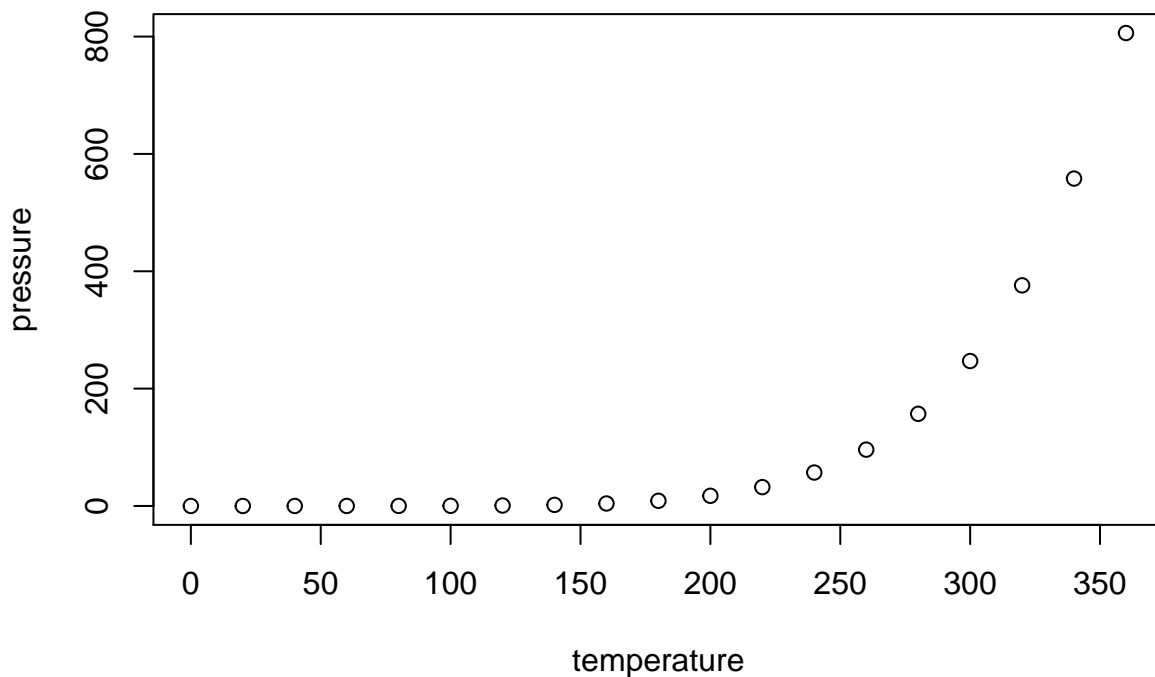
When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document. You can embed an R code chunk like this:

```
summary(cars)
```

```
##      speed      dist
##  Min.   : 4.0    Min.   :  2.00
##  1st Qu.:12.0    1st Qu.: 26.00
##  Median :15.0    Median : 36.00
##  Mean   :15.4    Mean   : 42.98
##  3rd Qu.:19.0    3rd Qu.: 56.00
##  Max.   :25.0    Max.   :120.00
```

## Including Plots

You can also embed plots, for example:



Note that the `echo = FALSE` parameter was added to the code chunk to prevent printing of the R code that generated the plot.