STAT432 Final Project Proposal

Project Name

Investigations on the FIFA20 dataset

Team Member

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Dataset

The original dataset (players_20.csv[1]) is obtained from Kaggle. This dataset contains FIFA20 player data. We pre-process the dataset with python to only obtain the data columns that we want to use in this final project and removed all data of Goalkeepers, which has a different record form than other players. The updated dataset players_20_edited.csv[2] contains 16242 non-goalkeeper soccer players and their physical data, scores on skills, and positions.

The full list of columns is:
Basic Info:
'short_name', 'long_name', 'age', 'height_cm', 'weight_kg', 'nationality', 'club', 'overall', 'potential', 'value_eur', 'wage_eur', 'player_positions', 'preferred_foot', 'international_reputation';
Featured Scores (a player's different professional abilities):
'weak_foot', 'pace', 'shooting', 'passing', 'dribbling', 'defending', 'physic', 'attacking_crossing', 'attacking_finishing', 'attacking_heading_accuracy', 'attacking_short_passing', 'attacking_volleys', 'skill_dribbling', 'skill_curve', 'skill_fk_accuracy', 'skill_long_passing', 'skill_ball_control', 'movement_acceleration', 'movement_sprint_speed', 'movement_agility', 'movement_reactions', 'movement_balance', 'power_shot_power', 'power_jumping', 'power_stamina', 'power_strength', 'power_long_shots', 'mentality_aggression', 'mentality_interceptions', 'mentality_positioning', 'mentality_vision', 'mentality_penalties', 'mentality_composure', 'defending_marking', 'defending_standing_tackle', 'defending_sliding_tackle';
Position Scores (a player's ability to play different positions):
'ls', 'st', 'rs', 'lw', 'lf', 'cf', 'rf', 'rw', 'lam', 'cam', 'ram', 'lm', 'lcm', 'cm', 'rcm', 'rm', 'lwb', 'ldm', 'cdm', 'rdm', 'rwb', 'lb', 'lcb', 'cb', 'rcb', 'rb', 'classification'

[1] The original dataset players_20.csv could also be found at https://www.kaggle.com/datasets/stefanoleone992/fifa-20-complete-player-dataset?resource=download&select=players_20.csv if the link fails.
[2] The updated dataset players_20_edited.csv could also be found at https://uofi.box.com/s/91m9qt18v7zhxh00d18edv7fx6x95fsw if the link fails.

Goal of analysis

The goal of this project is to try to figure out the relationship between the player's overall score and his different ability scores. We would also like to discover differences between differences between players' positions based on their various abilities (passing, shooting, dashing, etc.).

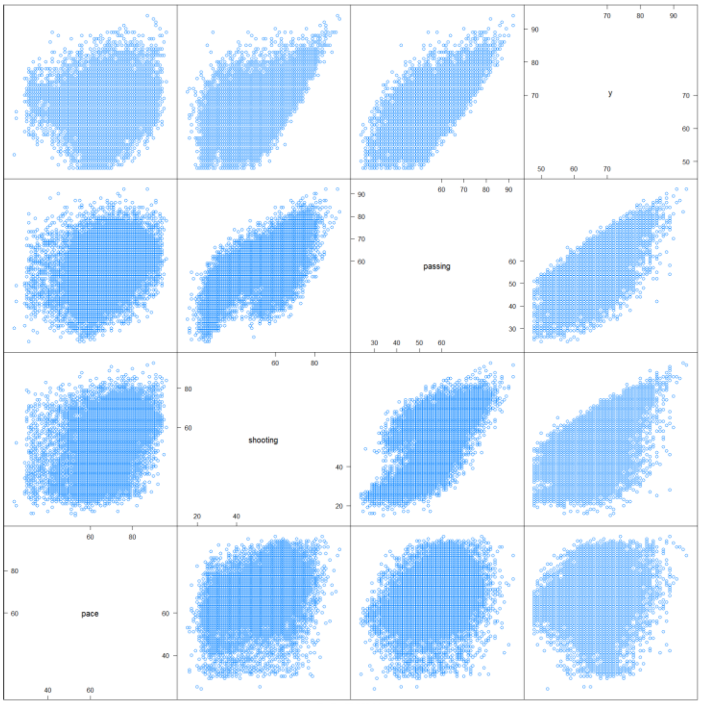
The following table demonstrates some of the responsible variable – explanatory variable pairs that we would like to discover in the project.

Response Variable	**Explanatory Variable**	**Comments**	**Type of Learning**
Overall Score	Abilities (pace, shooting, passing, …)	Explore how the game developer come up with a player's overall score given the player's different ability scores.	Regression
Potential Score	Nationality, Age, Abilities	Explore how the game developer come up with a player's potential score given the player's nationality, age and different ability scores.	Regression
Striker Score	Abilities	Explore how the game developer come up with a player's performance as a striker given the player's different ability scores.	Regression
L/RB, L/RWB	Abilities	Explore the difference between a player as a "back" or as a "Wing Back".	Classification
…	…	…	

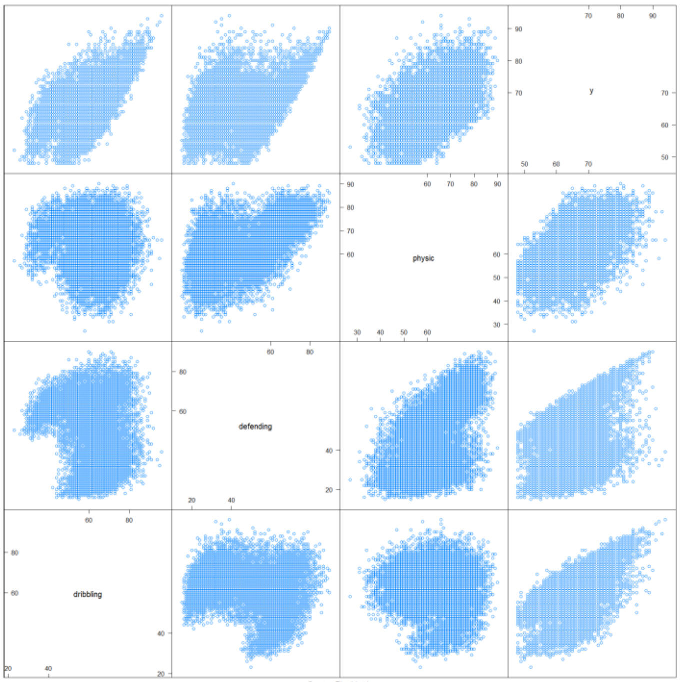
Preliminary Visualization

Some of the scatterplot matrices that we conducted as EDA are

1. Overall ~ .
Distribution of overall vs passing, shooting, pace, dribbling, defending, physics scores.

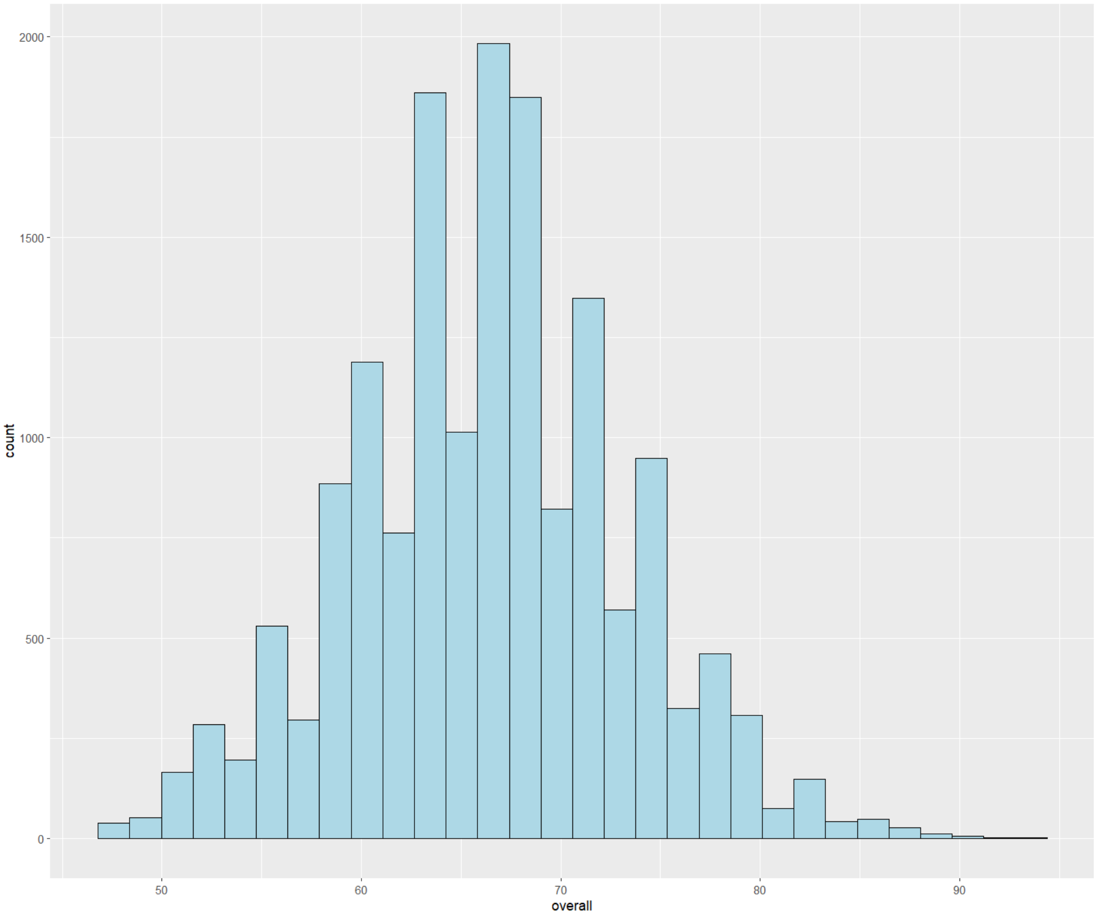


Scatter Plot Matrix

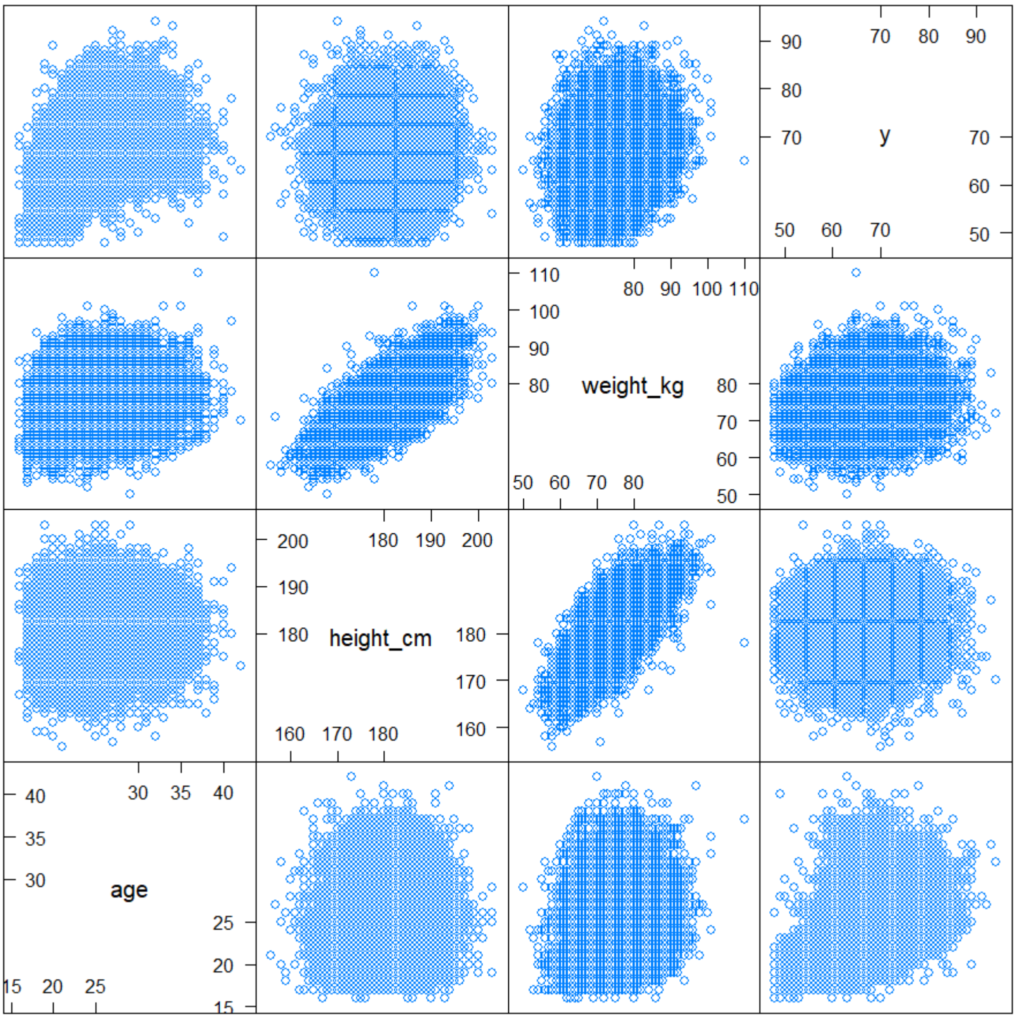


Scatter Plot Matrix

2. Histogram of Overall scores

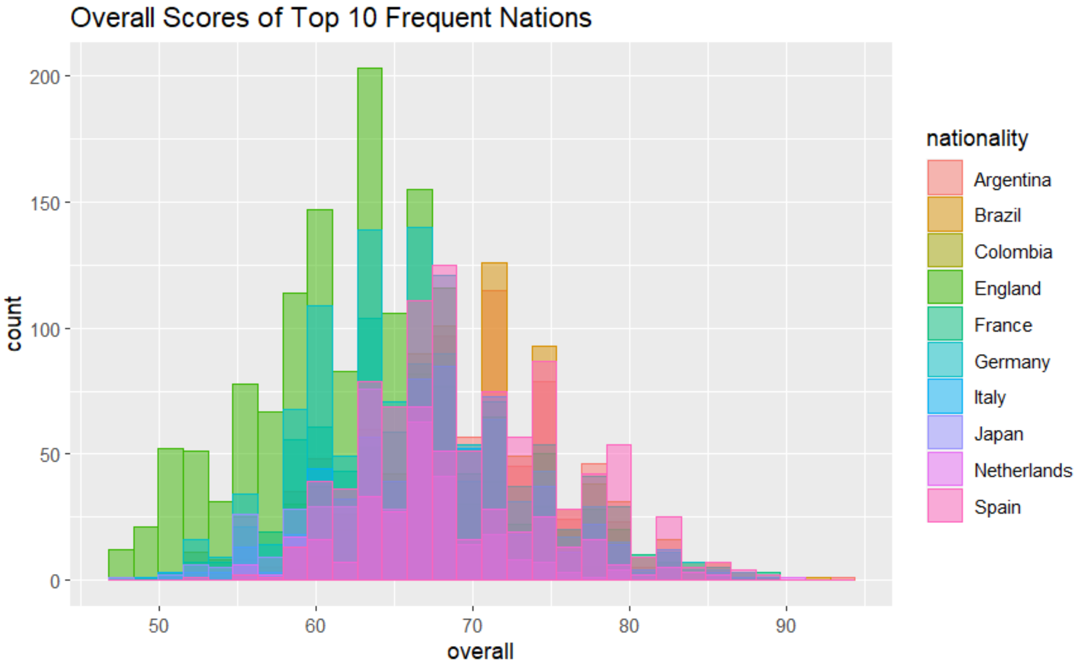


3. Overall ~ age + weigth + height

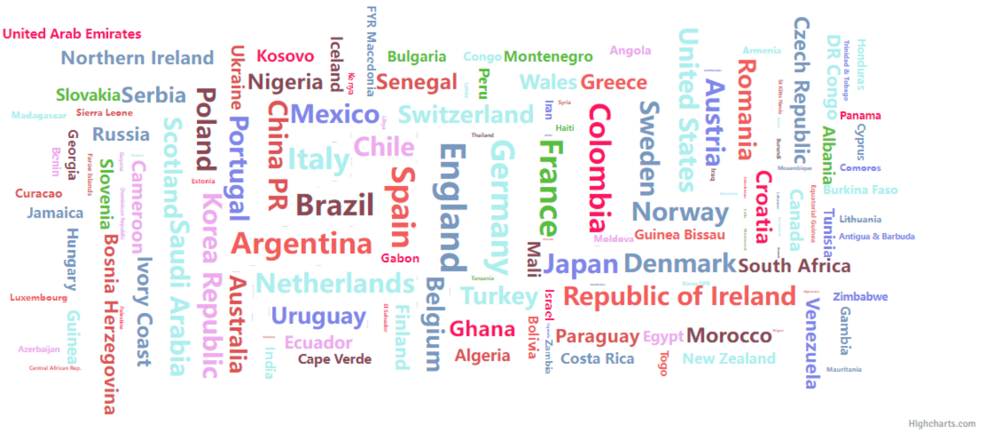


Scatter Plot Matrix

4. Histogram of overall scores for Top 10 frequent nations



5. Word could count of all players' nationalities


United Arab Emirates
Northern Ireland
Ukraine
Kosovo
Iceland
FYR Macedonia
Bulgaria
Congo
Montenegro
Angola
United States
Armenia
Czech Republic
DR Congo
Trinidad & Tobago
Honduras
Slovakia
Serbia
Nigeria
Senegal
Peru
Wales
Greece
Austria
Romania
Madagascar
Sierra Leone
Poland
Mexico
Switzerland
Iran
Syria
Colombia
Sweden
St Kitts Nevis
Panama
Russia
China PR
Haiti
Thailand
Burundi
Albania
Cyprus
Georgia
Benin
Faroe Islands
Slovenia
Cameroon
Scotland
Portugal
Italy
Chile
England
Germany
France
Iraq
Mozambique
Comoros
Estonia
Spain
Croatia
Burkina Faso
Curacao
Dominican Republic
Saudi Arabia
Korea Republic
Brazil
Canada
Equatorial Guinea
Jamaica
Norway
Tunisia
Lithuania
Antigua & Barbuda
Hungary
Bosnia Herzegovina
Argentina
Gabon
Moldova
Guinea Bissau
Mali
Japan
Denmark
South Africa
Ivory Coast
Netherlands
Tanzania
Korea DPR
Luxembourg
Australia
Belgium
Turkey
Republic of Ireland
Zimbabwe
Palestine
Uruguay
El Salvador
Finland
Israel
Venezuela
Gambia
Guinea
Ghana
Bolivia
Zambia
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