National College of Ireland

Configuration Manual

MSc Research Project
Programme Name

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National College of Ireland

Supervisor: Mr. Aaloka Anant

National College of Ireland
Project Submission Sheet
School of Computing

Student Name:	Sahil Chordia
Student ID:	x20203993
Programme:	Programme Name
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Configuration Manual

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1 Introduction

An explanation of the environment set up for the research project is given in detail in this configuration manual. This includes information about the programming language used, system configuration, and descriptions of the libraries and packages that were utilized. The Configuration Manual will be separated into the following six sections:

- Environmental Setup
- Libraries Required
- Data-set
- User Interface
- Implementation
- Code Repository

2 Environment Set-Up

2.1 System Specification

- Processor:- 11th Gen Intel(R) Core(TM) i3-1115G4 @ 3.00GHz 3.00 GHz
- Installed RAM:- 8.00 GB (7.76 GB usable)
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- SSD:- 256 GB

2.2 Technical Specifications

2.2.1 Python

- Version 3.7.4
- Google Colab which is an online Python based online user-interface, was used throughout this research as it provides all the libraries pre-installed. Which avoid getting errors due to previous versions of libraries installed. The other reason to use google colab was that it provide a strong GPU for processing.

3 Data Sources

3.1 Libraries Required

- Numpy: - NumPy was used to carry out all the mathematical calculations and operations in this research.
- Pandas: - Pandas was used to read and work with data-set which was in the form of .csv file
- Seaborn: - Seaborn was used for plotting graphs and visuals.
- Matplotlib: - Matplotlib was used for plotting graphs and visuals.
- Plotly: - Plotly was used for plotting graphs and visuals.
- Scipy: - SciPy It provides more utility functions for stats, optimization, and signal processing
- Sk-Learn: - The most effective and reliable Python machine learning library is called Skearn (Skit-Learn). Through a Python consistency interface, it offers a variety of effective tools for statistical modeling and machine learning, including classification, regression, clustering, and dimensionality reduction.

3.2 Importing Libraries

Figure 1 shows how the libraries used in this research were imported in the colab notebook.

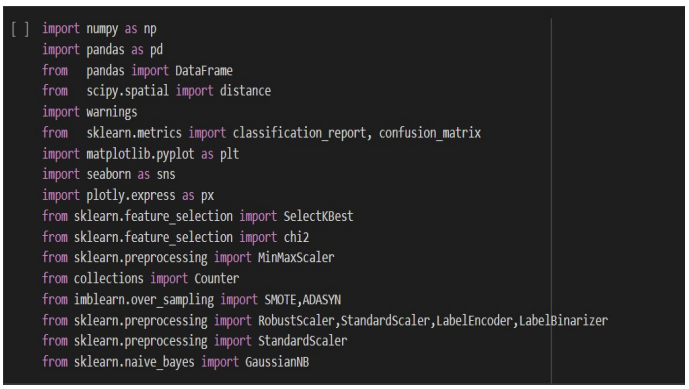

Figure 1: Importing Libraries

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4 Section 4

Data was downloaded from the above link, which is available in a comma-separated file (.csv).

Data Link: - https://www.kaggle.com/datasets/umeshkumar017/fifa-21-player-and-formation-analysis

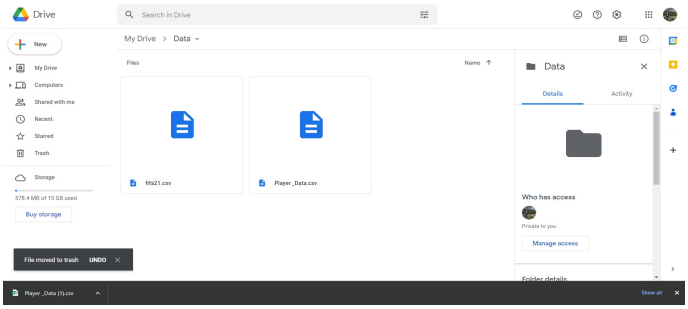

Figure 2: Mounting Drive

Data was stored in my drive showne link is given below and a image of data in google drive is 2:- Data-set link:- '/content/drive/MyDrive/Data/fifa21.csv' As I have used Google Colab for this research, I have uploaded my data to Google Drive and then mounted/connected my Google Drive to my Colab notebook, as shown in image 3.

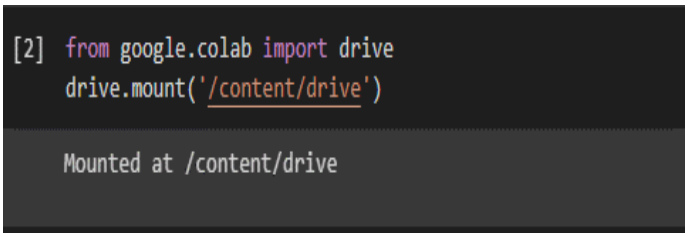

Figure 3: Mounting Drive

Once the data file was uploaded, I passed the link to the data as a parameter for pd.read_csv(), as shown in image 4.

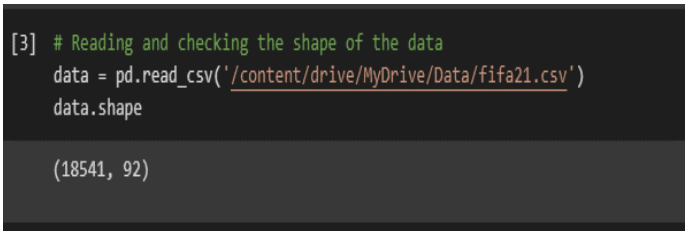

Figure 4: Reading Data

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After data has been linked to a Colab Notebook, I have printed the data to find the columns and attributes of the data.

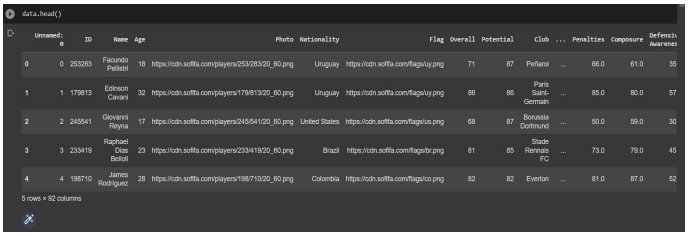

Figure 5: Data

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5 Exploratory Data Analysis

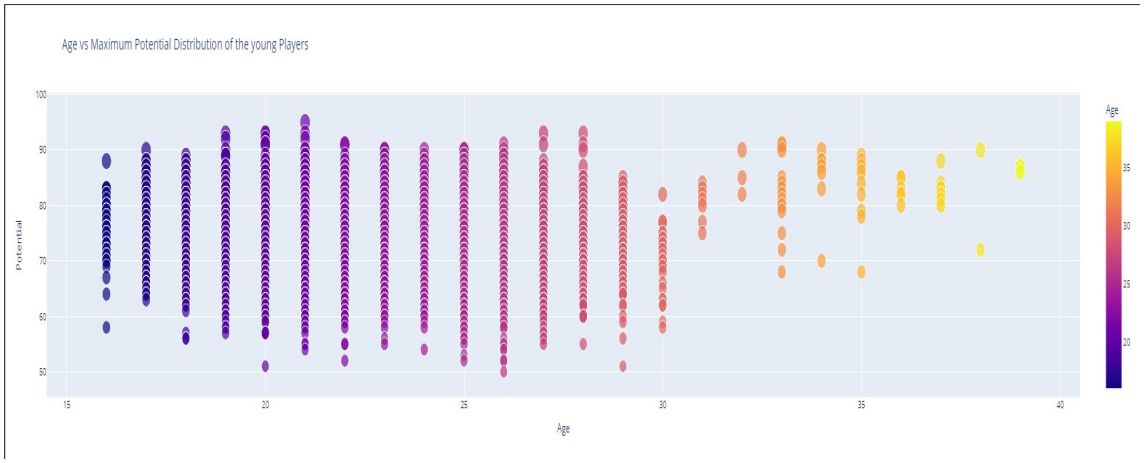

Figure 6: Age vs Potential Distribution of players

Figure 6 shows the Age wise potential distribution in the data set.

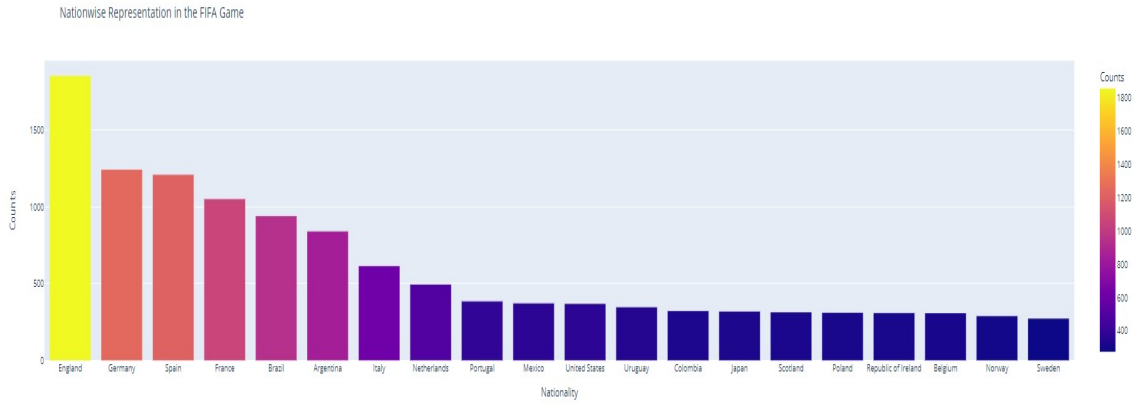

Figure 7: Nation-wise distribution of players

Figure 7 shows the Nation wise Player distribution in the data set.

	Name	Age	Position	Overall
0	David Josué Jiménez Silva	34	CAM	86
1	Carles Puyol Saforcada	35	CB	83
2	Sergio Busquets Burgos	31	CDM	87
3	Iago Falqué Silva	30	CF	77
4	Xavier Hernández Creus	34	CM	86
5	David De Gea Quintana	29	GK	86
6	Jordi Alba Ramos	31	LB	86
7	Iñigo Martínez Berridi	29	LCB	80
8	Marc Bartra Aregall	29	LCB	80
9	Luis Alberto Romero Alconchel	27	LCM	85
10	Luis Milla Manzanares	25	LDM	76
11	David López Silva	30	LDM	76
12	Marc Cucurella Saseta	21	LM	81
13	Francisco Alcácer García	26	LS	81
14	Mikel Oyarzabal Ugarte	23	LW	84
15	Jonathan Castro Otto	26	LWB	81
16	Daniel Carvajal Ramos	28	RB	86
17	Sergio Ramos García	34	RCB	89
18	Thiago Alcántara	29	RCM	85
19	Daniel Parejo Muñoz	31	RCM	85
20	Jorge Resurrección	28	RCM	85
21	Oier Sanjurjo Maté	34	RDM	77
22	Ferran Torres García	20	RM	81
23	Sergi Enrich Ametller	30	RS	77
24	Roger Martí Salvador	29	RS	77
25	José María Callejón Bueno	33	RW	84
26	Héctor Bellerín Moruno	25	RWB	80
27	Iago Aspas Juncal	32	ST	84

Figure 8: England Players

Figure 8 Shows list of players playing for England with their age, potential and position.

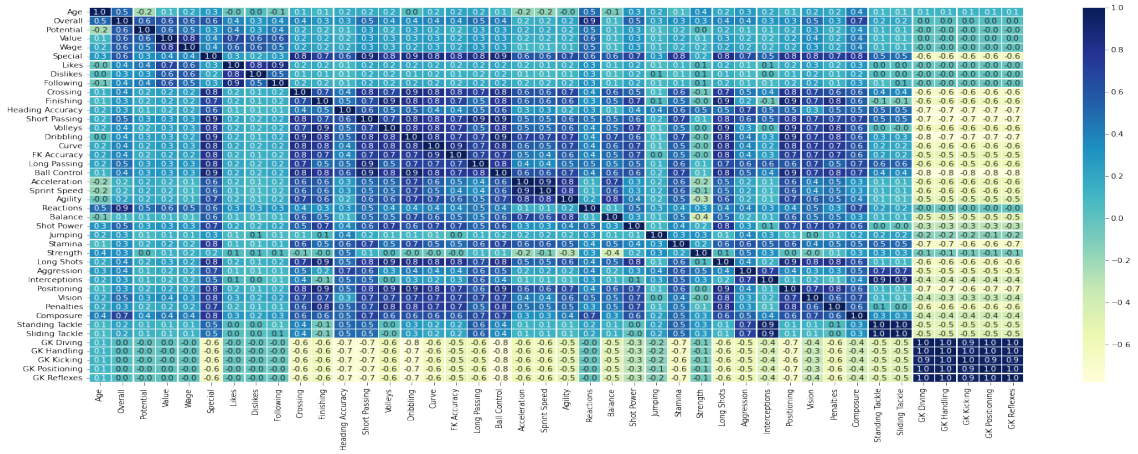

Figure 9: Correlation Matrix

Figure 9 displays the correlation matrix of this data.

6 Experiments

In this section, I have added snapshots of experiments conducted in my research.

6.1 Experiment 1

6.1.1 Feature selection for Experiment 1

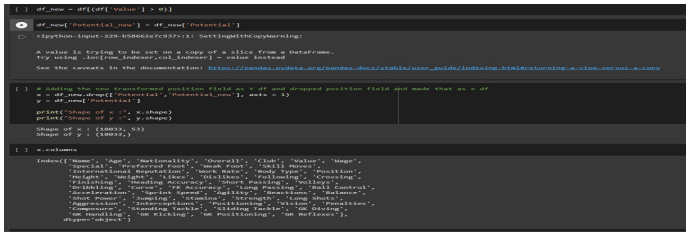

Figure 10: Features for experiment 1

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6.1.2 Modeling for Experiment 1

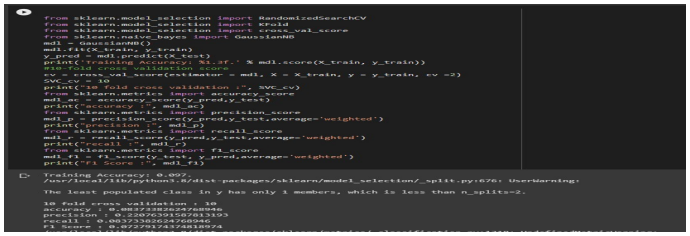

Figure 11: Modeling for experiment 1

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6.2 Experiment 2

6.2.1 Feature selection for Experiment2

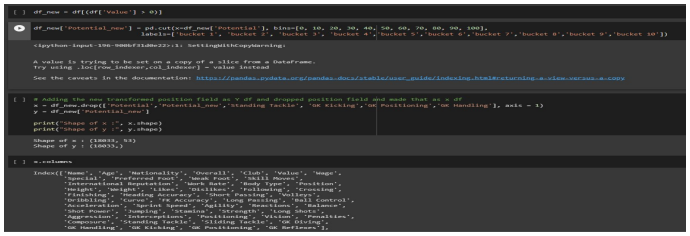

Figure 12: Features for experiment 2

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6.2.2 Modeling for Experiment 2

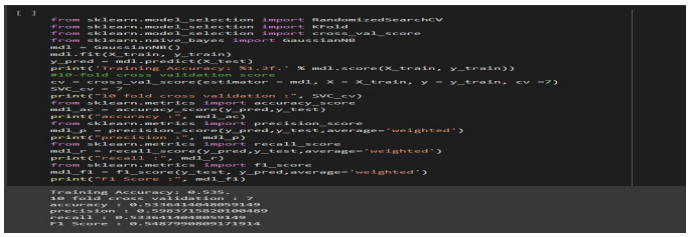

Figure 13: Modeling for experiment 2

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6.3 Experiment 3

6.3.1 Feature selection for Experiment 3

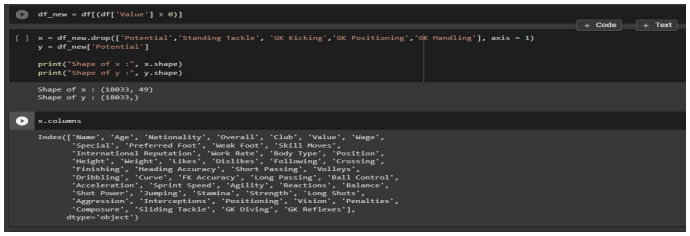

Figure 14: Features for experiment 3

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6.3.2 Modeling for Experiment 3

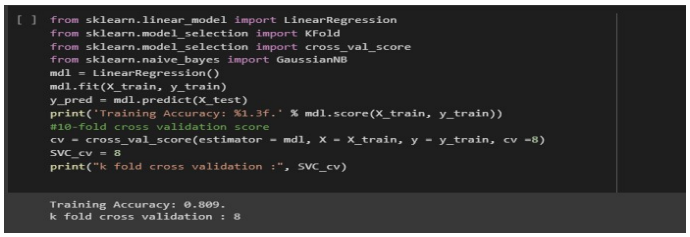

Figure 15: Modeling for experiment 3

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7 Results

Figure 16 summarizes the results of all three experiments conducted through-out this research.

	Training Accuracy	Testing Accuracy	Precision	Recall	F-1 Score
Experiment 1	09%	08%	22%	08%	07%
Experiment 2	54%	53%	59%	53%	54%
Experiment 3	80%	78%	81%	78%	79%

Figure 16: Evaluation Summary

Figure 17 displays the results in the form of a bar-chart.

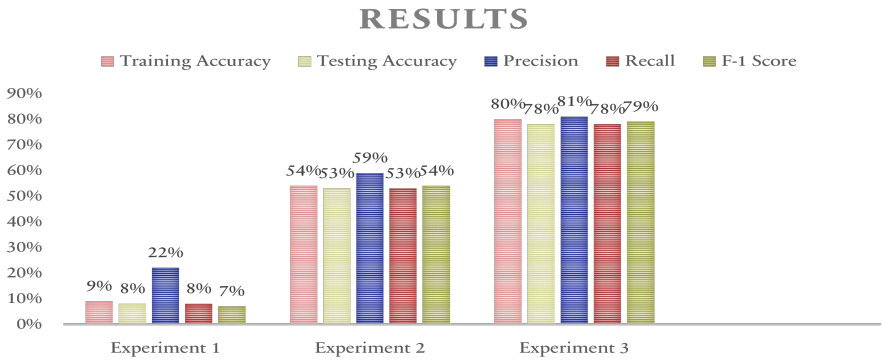

Figure 17: Results Chart