

FOOTBALL: PLAYER RECOGNITION & ANALYSIS

A Minor Project Synopsis Submitted to



**Rajiv Gandhi Proudyogiki Vishwavidyalaya, Bhopal
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**Bachelor of Technology
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**Under the Supervision of
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1. Abstract

The main task of football: player recognition & analysis system is to increase the interest of people (specially in youth) so that people get to know more about football and the game can get its actual value as it has in other parts of world. The sports sector in India has witnessed several recent developments, which have contributed to its significant growth. Although the game was always popular across certain regions and pockets of society, we are trying to build a project to provide all the information and all the rules at a same place.

There are multiple websites which provide details but this website will provide not only the details about the football but as most of the people in India knows only three or four players so this project provides player recognition technology which will classify the player on the basis of a photograph or name which will provide all the details and statistics about that player in addition the user can find out the all the leagues and clubs present currently with the help of the available links on our website.

By this project we are trying to gain interest of youth mainly so that India can become a football giant in future as it is in cricket in current world.

2. Introduction of the Project

In recent years, computer science has demonstrated great potential in the sport fields. For example, computer vision-based virtual reality was used for sports posture correction, a computer vision-driven evaluation system was adopted for decision-making in sports training, and object detection was used in sports analysis. Sports analysis is crucial for improving athletes' performance.

We suppose that every country has its main sport, but in India cricket is a religion. I remember watching a debate on a local television channel, not so long ago about why Indians aren't able to make the cut in sports other than cricket. Things are changing in India though. Wolverhampton Wanderers have linked up with an I-League team and Arsenal have expressed an interest and have also come down to India to do some recruiting. It is reported that three boys have been selected to train at Arsenal for a certain period, and this by itself is a massive achievement for us Indians. Indians have to become more open-minded about sports like football. The opportunities are limited for the foreseeable future but there has to be a start somewhere. So, the main idea behind this project is to make people aware about football and its various aspects. Such as its different rules, different leagues, Qualifications for champions-league, champions league itself, different players and there statistics.

With the rapid development of computer vision technology, detection of players is more and more popular in identifying characteristics of athletes and its existence helps in gaining the knowledge in the field of football. This contactless technology enables users to identify the players information accurately and in the detailed manner including the statistics of the players journey in the football world. It can also help the coaches and athletes to analyze opponent teams' strength and weakness from past match statistics data, and design better strategies in future competitions.

The key steps are player recognition and providing the detailed information of player as well as the game football on which our predictions are based on. In this work, we develop a player classification model to predict the player and give detailed statistics.

3. Objective

The project uses the main techniques of Computer Vision to carry out player Detection on amateur football games.

The Main objectives are-

Dataset Preparation-To fetch various statistics in an automated way to be able to perform analytics, Object Detection, Improve Detection, Identify the team or club the player belongs to and achieve comparable results to the existing methods.

- Our website will be promoting the football sport related activities and will give the information about all the leagues and clubs present in football.
- The purpose is to develop a model using which user can identify the player and its statistics based on the past data.
- Over time, the interest of sports clubs in issues and technologies belonging to Artificial Intelligence is growing.
- The goal is to implement a system capable of providing strategic indications to coaches, thanks to the modelling and techniques of Machine Learning and to develop a new gaming experience for fans.
- It is a easiest platform for all football fans through which user can search and identify the player, find out the best ones and all the rules and positions present in football.

4. Scope

As there is less awareness and knowledge of football in India, so our motive is to create awareness and provide the correct knowledge to the people. Career in football, which is also recognized as soccer, is now a global industry of multi-billion-pound, which indicates there are more football-related jobs than ever before. Football is no longer acknowledged as a sport with no future. In India, there are several universities offering programs in sports at PG and UG levels. Academies like All India Football Federation, Goa Regional Academy, Tata Football train the students in the sport and equip the students with the essential skills. University Campus of Football Business or UCFB is the world first in sports education, offering university degrees in football as well as other sports industries. The average pay of around 3 Lakhs is earned by an entry-level football player with 1-3 years of experience.

Football is gaining momentum and also getting nationwide attention with the start of the Indian Super League. It has inaugurated some considerable changes in Indian football. Nowadays, many youngsters or new faces are getting opportunities to play football, grass-roots level courses are also begun across India. Times have evolved, and so has the perception of football and other sports in India. A career in football is not only restricted to the sports industry and opens opportunities in the advertising, media and education sectors. Future scope of football may be like automated commentary.

5. Study of Existing System

Name	Description	Merits	Demerits	Reference
GOAL	GOAL brings you all the breaking news and the latest scores from the world's best leagues and biggest tournaments.	Has a good interface, Lots of content, great layout and easy to navigate. We can also choose our favourite teams and leagues.	Shows a lot of ads. The featured section doesn't work anymore. Only premier league clubs get the priority.	https://www.goal.com/en-in
ONEFOOTBALL	OneFootball is a platform-based football media company. The	It is really good that how many sources that this app gets its data	1. You can't lookup each fixture of each club, only the	https://onefootball.com/en/home

	OneFootball app features live-scores, statistics and news from 200 leagues in 12 different languages covered by a newsroom located in Berlin.	and news articles from. Stats, reviews, news, transfers and mini clips are great.	next upcoming match for each club can be viewed. Matches are only by competition and you have to click on specific matchday. 2. There's no information on TV broadcasts channels.	
433: THE HOME OF FOOTBALL	With more than 60 million followers worldwide and 5+ billion impressions per month, 433 is the home of football. Born out of a passion for the beautiful game, 433 is the embodiment of football culture. By positioning ourselves inside the locker room, It has become part of the team and equal to the players. This gives them access to the best moments football has to offer.	433 is one of the largest social sports communities in the world. Bringing you the latest news fast. The funniest clips and the most remarkable background stories are also brought to you by 433. 433 is not your average sports news site. A high dose of humor and tongue-in-cheek style, that is 433.	They do not talk about rules and basic knowledge of football they just provide the news and social media content related to football world.	https://www.433football.com/
PREMIER LEAGUE	Premierleague.com is a website containing all the information stats and details about premier league. It has everything related to premier league as it is considered to be the toughest league in the world.	Major merit of this website is that it provides everything related to the premier league at a place. All the score lines, future fixtures and transfer market news at one place.	The main demerit of this website is it only report about premier league. It does not concern with other leagues and national matches.	https://www.premierleague.com/
FIFA	It is the official site of the international governing body of football with news, national associations, competitions, results, fixtures, development,	FIFA also include various information regarding the football related information as well as the current	It does not cover small leagues such as Indian Super League and does not provide Indian football details it solely	https://www.fifa.com/

	organization, world rankings, statistics, the international football association board, history, laws of the game, publications, downloads, and contact details.	affair in football league, it also gives us live score of matches that are held all over the world in specific league, Fifa. Com has also an official Apps that you can download from play store.	focuses on main players, their activity and successful clubs.	
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6. Project Description

- The proposed system intend to provide everything about the sport football in a well-informative way through a web application.
- We will be covering all the leagues currently present and which club comes under which league and all the rules , formations and positions present in the football.
- Through the search bar ,the user can search a player and from the dataset which we have made by taking the reference from Kaggle, the user will get the information of the player and its statistics based on the past data. We'll be using MySQL for the database and all of this data will be accessed through Flask(Python Framework).
- The stats of the players will be helpful in getting the knowledge and find out the best player which provides strategic indications to coaches and come up with the effective one.
- Our system also have feature to identify the player by the photograph and give detailed information about it.

Advantages of the Proposed System

- Gives accurate information of the player
- Gives information about various leagues and clubs
- Provides statistics in different forms
- Easiest platform for searching the player
- Gives knowledge about football in brief

7. Methodology/Planning of the Project work

First of all, we will develop a website for our work. On that website we will have the following features –

Current Leagues – We will cover most of the popular ongoing leagues of football around and globe such as Premier League, La Liga, Indian Super League and Champions League.

Clubs and Leagues – In this section we will cover the part that which clubs falls in which league and which league belong to which part of world and how does teams qualify for the champions league.

Players Identification – As we know in our country most of the people know only few of the football icons so we will try to make them familiar with more players by providing player recognition system which will detect the player on the basis of name or photograph.

Player Stats – In this section we will provide all the statistics related to searched player i.e. He plays for which club, his nationality, his age etc.

Rules and Formations – This section is related to all the rules and regulations in game of football such as offside rule. It will also provide most used formations by the teams and most popular positions of the players so basically it will provide all the basic knowledge you need to understand the game of football.

8. Expected Outcome

This website will result in all round football project which will provide all the basic knowledge of football you need to know to understand game at its fullest. This is a multi-page website in which on home section you can find a player recognition system which will take a photo as an input and our website will provide all the information of the player whose photo is uploaded such as his club, his country, his career statistics and a general introduction. On the other pages you will find major leagues going on and there clubs too. From here you'll get to that which club comes under which leagues and which players belong to that club. On another section you will find all the rules and formations and positioning of players in the game. There would also be a section of history containing all the previous winners of different leagues. From this website we are trying to engage the youth of India in game of football as much as possible.

9. Resources and Limitations

Here, User can get all the information and statistics related to footballing world at one place they can also use player identification to make them more familiar with players and rules. They will also get to know club plays in which league and how does clubs qualify for champions league.

As football is getting great response from different part of the country this project will provide all the basic information required to understand the game of football technically such as all the basic formations positions and rules.

TECHNOLOGY-

Front end: HTML, CSS, JavaScript

1. HTML: HTML is used to create and save web document. E.g. Notepad/Notepad++
2. CSS: (Cascading Style Sheets) Create attractive Layout
3. Bootstrap: responsive design mobile friendly site
4. JavaScript: it is a programming language, commonly use with web browsers.

Back end: Python, Flask

1. Python: Python is a high-level, general-purpose programming language. Its design philosophy emphasizes code readability with the use of significant indentation. Python is dynamically typed and garbage-collected. It supports multiple programming paradigms, including structured, object-oriented and functional programming.
2. Flask: Flask is a web application framework written in Python. Flask is based on the Werkzeug WSGI toolkit and Jinja2 template engine.

Player Recognition:

1. OpenCV - OpenCV was started at Intel in the year 1999 by Gary Bradsky. The first release came a little later in the year 2000. OpenCV essentially stands for Open-Source Computer Vision Library. OpenCV-Python is the python API for OpenCV. You can think of it as a python wrapper around the C++ implementation of OpenCV. OpenCV-Python is not only fast (since the background consists of code written in C/C++) but is also easy to code and deploy (due to the Python wrapper in foreground). This makes it a great choice to perform computationally intensive programs.
2. Haar Cascade Classifier - Haar cascade classifier employs a machine learning approach for visual object detection which is capable of processing images extremely rapidly and achieving high detection rates.

OPERATING SYSTEM: Windows 7 or Above.

Basic software programs-

Basic Text or HTML Editor, Web Browsers, Graphics Editor, FTP Client-Need an FTP (file transfer protocol) client to transfer your HTML files and supporting images and graphics to your web server.

Hardware Requirements:

Processor: Minimum 1 GHz; Recommended 2GHz or more.

Ethernet connection (LAN) OR a wireless adapter (Wi-Fi).

Hard Drive: Minimum 32 GB; Recommended 64 GB or more.

Memory (RAM): Minimum 1 GB; Recommended 4 GB or above.

Backup Drive- Have backup drive for your computer to ensure that you don't lose the investment you've made in your computer.

Limitations: The acquired results during experiments are limited to some extent and may much vary depending on the experiment settings.

One of its major demerits is it does not provide real time score of ongoing matches. And the photo required for player recognition must contain both eyes of that player to provide appropriate result. The stats provided about a player must be updated regularly.

10. Conclusion

We have proposed an efficient system which identify football players from the photograph and provide statistics of the players. Our system uses Open CV and Haar Cascade Classifier for the recognition of the player, with the advantages of giving information about the leagues and clubs and to fulfill our objective that is to create awareness and interest among youth about football through our website. Our results shows that the model can perform well on the dataset obtained from Kaggle, indicating the wide applications of this algorithm.

Having done all above processes successfully, the model was able to identify players from the same team. Detection is just the beginning. Now we can really take it to the next level! We can now quickly analyze the course of the action, knowing how the ball traveled between players, count the distance the players traveled, or locate the field zones where they appeared most often.

11. References

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