

# Player Re-Identification Project--Report

## Overview

In this project, I worked on player detection and re-identification in a football match video. The goal was to detect players in each frame and give them an ID so we can track them as they move, leave, and come back in the video.

I used the model which was attached with the document, It was YOLO Model- (You only look once ) for detecting players, and then applied a simple cosine similarity method to track the same players consistently by comparing their cropped images.

## Approach and Method

### 1. Detection

Used the model already given (model already Given-best.pt). It detects players quickly and works fine even when players are small or moving fast.

### 2. Tracking

Since I didn't use any tracking library like DeepSORT, I tried a simple method:

- I assigned IDs to players when they first appeared.
- Then, in the next frame, I checked the distance between new detections and previous detections' positions (bounding box centers).
- If a new box was close enough to a previous one, I gave it the same ID.
- If not, it got a new ID.

## What I Got

- YOLO detected players quite well, even small and far ones.
- IDs worked okay when players stayed on screen but when too many overlaps happened or someone went out of frame, IDs sometimes changed after they came back.

## Problems

- Without a proper tracker, when players moved quickly or crowded together, IDs got mixed.
- If a player was hidden for a while and came back, it was hard to assign the same ID.

# Improvements

If I had more Time:

- I would add DeepSORT to properly manage IDs.
- Add a way to recognize the same player after they leave and re-enter, maybe by comparing size or colour of bounding boxes.