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# *Player Detection and Identity Tracking*

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# *Introduction*

The analysis of player movement and behavior in sports footage is increasingly being automated through computer vision and deep learning techniques.

## *Objective*

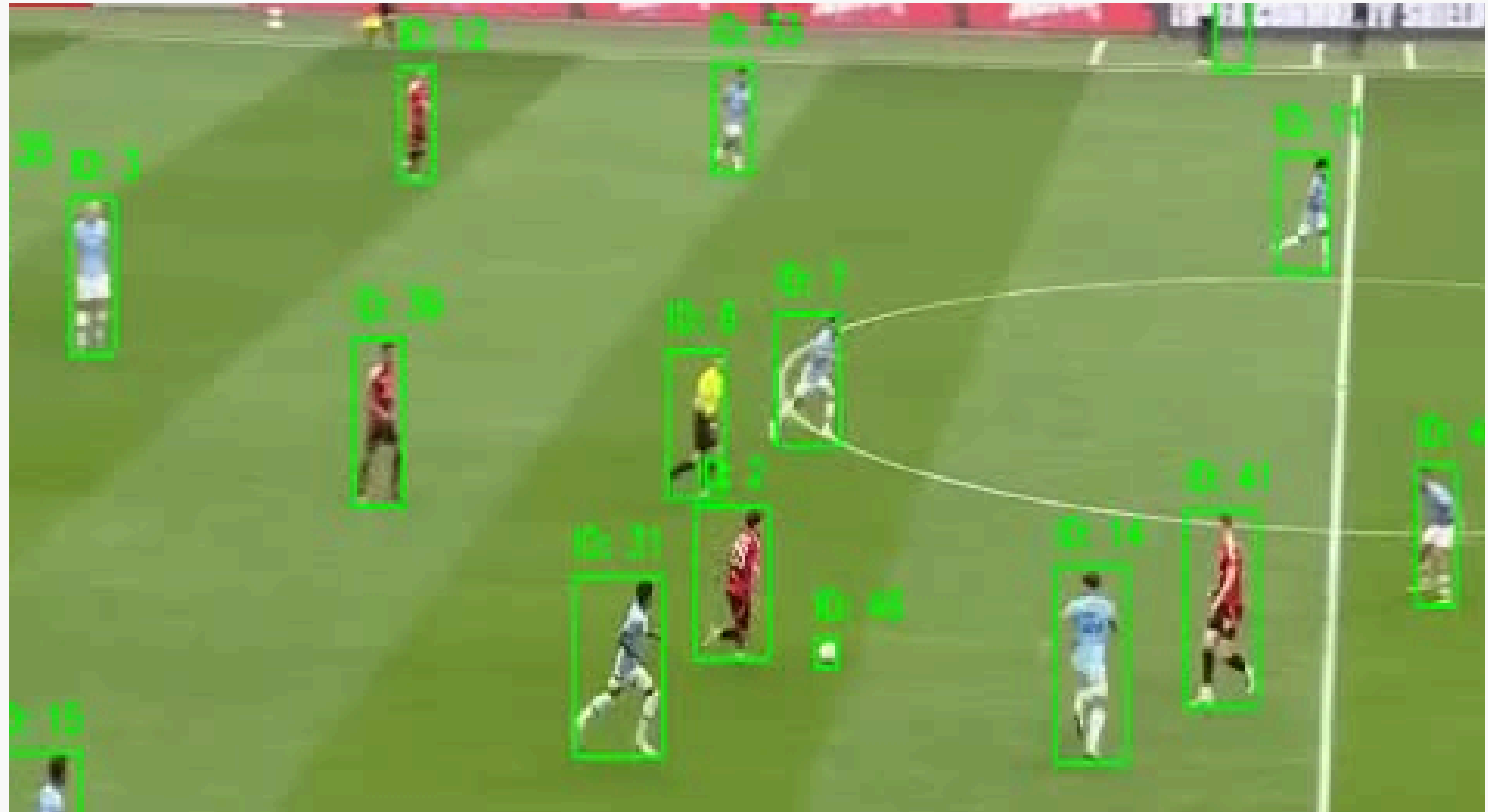
### **Option 2: Re-Identification in a Single Feed**

Given a single 15-second clip (15sec\_input\_720p.mp4), track players and ensure that players who leave and re-enter the frame are still assigned the same identity.

# *Methodology*

- **Downloaded the Provided YOLOv11 Model:** From the link provided in the assignment.
- **Player Detection:** Run YOLOv11 on each frame to get player bounding boxes.
- **Feature Extraction:** Extract features (visual: color histogram or CNN features). Store player positions and embeddings.
- **Tracking:** Use a tracking-by-detection algorithm. Deep SORT (Deep feature + Hungarian Matching)
- **Re-identification Logic:** Maintain consistent IDs based on appearance and position. When a player re-enters the frame, match with earlier features.
- **Evaluation:** Ensure that players leaving and coming back are recognized as the same. Create a final video showing bounding boxes with consistent player\_id.

## *Output*



## *Conclusion*

In this project, I integrate YOLOv11, a state-of-the-art deep learning model for real-time object detection, with DeepSORT. This appearance-based tracking algorithm assigns unique IDs to players and maintains their identities across frames.