

Player Re-Identification Assignment Report

1. Objective

To detect and re-identify players in a 15-second football video clip using YOLOv11 for object detection and Deep SORT for real-time identity tracking, ensuring consistent IDs for players even when they leave and re-enter the frame.

2. Methodology

- A fine-tuned YOLOv11 model was used to detect players in every frame.
- Detected bounding boxes were passed to Deep SORT for identity tracking.
- Deep SORT matched players over time using location (IOU) and appearance features (cosine distance).
- The final output was saved as a video (`output.mp4`) with unique IDs assigned to each player.

3. Techniques Used

- YOLOv11 for high-speed player detection.
- Deep SORT for consistent identity assignment and re-identification.
- OpenCV to handle video I/O operations.
- Python in a Jupyter Notebook environment for implementation and debugging.

4. Challenges Faced

- Matching YOLO's bounding box output format with Deep SORT's required input.
- Ensuring that Deep SORT maintained IDs accurately across occlusions or temporary disappearance.
- Managing frame resolution consistency while writing the output video.

5. Outcome

- ✓The model detects and tracks all players accurately.

✓ Player IDs are preserved even when they exit and reappear in the video.

☐ The system meets the requirements for single-feed re-identification.