

Player Tracking Report

Approach and Methodology

The goal of this project was to detect and track football players in a video using YOLOv8 and ByteTrack. The idea was to assign each player a unique ID, keep it consistent even when the player exits and re-enters the frame, and log their coordinates frame by frame into a CSV file. The ball and irrelevant detections were filtered out using a bounding box size threshold.

We used a pretrained YOLOv8 model trained on the COCO dataset, which can detect persons (class 0) along with other objects. We filtered to detect only class 0. ByteTrack was used as the multi-object tracker to assign and maintain consistent player IDs. All valid detections were drawn on the frame with a bounding box and label, and logged to a CSV file.

Techniques Tried and Their Outcomes

First, we tested the YOLOv8 model out of the box. It detected players accurately but occasionally misclassified the ball as a person. To handle this, we filtered out detections that were too small in height or width to likely be a player.

Setting `classes=[0]` ensured only person-class detections were processed, which helped eliminate ball detections unless the model confused it with a player. ByteTrack worked well for tracking and assigning IDs across frames and re-identifying players who left and returned to the frame.

We also implemented CSV logging, which successfully stored player ID, bounding box coordinates, and frame number for later analysis.

Challenges Encountered

A key challenge was the ball being misidentified as a player. This was fixed by ignoring detections with a bounding box smaller than a certain threshold.

Another issue was that player IDs weren't initially showing. This was resolved by ensuring we checked for the presence of `results[0].boxes.id` before drawing or logging IDs.

In GitHub setup, password-based authentication failed because GitHub now requires SSH keys or personal access tokens. This was resolved by removing the remote and re-adding it correctly, then switching to PAT-based login.

Summary

This project successfully tracks players in a sports video using YOLOv8 and ByteTrack. Player IDs are maintained across frames and exported to a CSV file. Small, irrelevant detections such as the ball are filtered out. The combination of model filtering, ID tracking, and bounding box analysis forms a strong base for a sports analytics tool.