Project Report - Football Player Tracking

1. Approach and Methodology

The goal of this project is to track football players from a video input using object detection techniques. A YOLO-based model (likely YOLOv5 or YOLOv8) is used for detecting players in each frame. The frame-wise detection output is used to visualize and track players throughout the game footage.

2. Techniques Tried and Their Outcomes

- Frame Extraction using OpenCV
- YOLO Inference for real-time detection
- Player ID Assignment (manual or placeholder logic)
- Matplotlib for Visualization of bounding boxes on frames

The YOLO model performed well in identifying multiple players in each frame, and the frame plotting allowed for debugging the detection results.

3. Challenges Encountered

- Detection might vary under occlusion or motion blur.
- Player ID consistency was hard to maintain without a tracker like DeepSORT.
- Large input video size slowed down processing in Colab.

4. Incomplete / Future Work

- Implementing a proper player re-identification or tracking method (like DeepSORT)
- Automating jersey color-based team classification
- Exporting detection results as CSV/JSON for analysis

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