ChatGPT

README: Player Re-Identification in Soccer Matches

Overview

This project addresses the problem of player re-identification in soccer match videos. The objective is to assign consistent IDs to each player, even if they leave and reenter the frame at different points during the match.

Setup Instructions

Dependencies

Install the following Python packages:

```
pip install ultralytics opencv-python torch torchvision numpy scipy
```

Directory Structure

```
project_root/
├── data/                   # Input videos
├── models/yolo/best.pt     # Provided YOLOv11 model
├── output/                 # Annotated output videos
├── src/
│   ├── detector.py
│   ├── tracker.py
│   ├── feature_extractor.py
│   └── reidentifier.py
├── main.py
└── README.md
```

How to Run

Make sure the YOLOv11 model is located at `models/yolo/best.pt` and the input video is in the `data/` directory. Run the following command from the project root:

```
python main.py --video data/sample.mp4 --output output/result.mp4 --yolo-
weights models/yolo/best.pt
```

To quit the visualization window, press `q`.

Notes

- The model assumes only two detection classes: player and ball.
- Each player is assigned a unique ID using a simple tracker and re-identification module.
- Cosine similarity of feature embeddings helps maintain consistency in identity assignment across frames.