Requirements for CV models

## 1. Player Detection:

1. Use a pre-trained object detection model like YOLO, Faster R-CNN, or whatever you like to detect players in each frame.
2. Fine-tune the model based on the data clip sent to improve accuracy.

## 2. Player/Ball Tracking:

1. Implement a tracking algorithm such as Deep SORT, and deep learning for robust tracking.
2. Use the bounding box outputs from the detection step as inputs to the tracker.

## 3. Action Recognition:

1. Train a neural network to recognize specific soccer actions (e.g., passing, shooting) using labeled video clips. CNN-LSTM networks are effective for this purpose.
2. If you decide to proceed I can help extract those clips of actions from the hour long video.

## 4. Highlight Extraction:

1. Detect events and segment the video around these events.
2. Save clips corresponding to detected actions for each player.
3. I need it to be 2 seconds before the player touches the ball and 2 seconds after they no longer have possession

## 5. Statistical Analysis:

1. Once actions are detected and players tracked, calculate statistics (e.g., number of passes, shots, distance covered).
2. Store these statistics in a structured format (e.g., CSV, JSON).

## 6. Video Segmentation:

1. Extract segments of the video where a specific player is involved.
2. Use video processing libraries like OpenCV or FFmpeg for video editing and clipping.
3. Concatenate clips relevant to each player together to create an individual player highlight reel.
4. As it is a 5-a-side game there will be 10 videos

Note: I do not want to pay for cloud server costs, I rather a script was built that I can run locally if possible even if that part is manual. Also point 3 and 5 aren’t essential for the time being as the volume of videos will be low for now. That can be worked on in the future if needed.