Therapist and Child Detection and Tracking

Assignment Description:

The assignment aims to build a person detector (specifically, only, child and adult) along with a tracking approach, to assign unique IDs to persons, and track them throughout the video. The proposed method should be able to

- Assign Unique IDs: The aim is to assign unique IDs to persons and track them throughout the video.
- Track Re-entries: The proposed method should be able to track the person if he/she goes out and re-enters the frame. This includes multiple children and adults.
- Assign New IDs: Assign a new ID to a person entering the frame for the first time.
- Post-Occlusion Tracking: Re-track the person and assign the correct ID within the video duration, post-occlusion, or partial visibility.

We are interested in identifying different children with Autism Spectrum Disorder and therapists in a video and tracking them to understand their behaviors, emotions, and engagement levels, and to provide treatment plans to enhance their skills.

Problem statement:

Develop an optimized inference pipeline that given a long-duration video can show the predictions of the child and therapist's bounding boxes along with a unique ID. We prefer your code in the Python language. **You also feel free to use any state-of-the-art open-source models that you think would be better.** The pipeline should be tested on the below test videos shared, consisting of a YouTube video list in the Google Drive link, the code should plot/display the predictions of the child and therapist's gaze on the videos.

Expected Output:

Output Video with the predictions overlaid on the Test Videos - Predictions of the child and therapist labels and their unique ID number.

Test Videos:

https://drive.google.com/file/d/1VrDx8yF84GCvVAt8DAgBfA7e_814061Q/view?usp=sharing

Deliverables:

1. Source code files: Inference scripts, test video outputs, and requirements files.
2. README.md: Detailed description of the logic behind analyzing the model predictions. The descriptions should be easy to follow and help the evaluator easily reproduce the results.
3. All the above are archived in one single .zip or .tar file. Either send a mail or share the link to download.

Timeline: The deadline for submission is seven days after receiving the assignment.