Therapist and Child Detection and Tracking

Overview

The goal of this project is to build a robust person detection and tracking system that can distinguish between children and adults, track their movements, handle re-entries, and manage post-occlusion scenarios. The system is optimized to assist in identifying and tracking children with Autism Spectrum Disorder and therapists, which is crucial for analyzing their behaviors, emotions, and engagement.

Pipeline Description

1. **Model Training:**
    - **Model:** best.pt
    - **Platform:** Google Colab
    - **Training Data:** Custom dataset consisting of images of children and adults.
    - **Purpose:** To tailor the YOLO model to specifically detect and classify children and adults based on the custom dataset.
2. **Video Capture:**
    - The video is read frame-by-frame using OpenCV's cv2.VideoCapture.
3. **Detection:**
    - Each frame is processed using the YOLO model to detect and classify persons as either "child" or "adult."
    - Bounding boxes are drawn around detected persons, and confidence scores are calculated.
4. **Tracking:**
    - The SORT algorithm is employed to track detected persons across frames.
    - Unique IDs are assigned to each detected person and tracked across the video.
5. **Visualization:**
    - Bounding boxes, class labels, and unique IDs are overlaid on the video frames using the cvzone library for clear visualization.
6. **Output:**
    - The processed video with overlaid predictions is displayed, showing the tracking of children and adults with their unique IDs.