*#Task 10:*
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# POSE ESTIMATION

✧ Pose Estimation is a general problem in Computer Vision where we detect the position and orientation of an object.

✧ Human pose estimation from video or a real-time feed plays a crucial role in various fields such as full-body gesture control, quantifying physical exercise, and sign language recognition. For example, it can be used as the base model for fitness, yoga, and dance applications. It finds its major part in augmented reality.

✧ Media Pipe Pose is a framework for high-fidelity body pose tracking, which takes input from RGB video frames and infers 33 3D landmarks on the whole human.

✧ Current state-of-the-art approach methods rely primarily on powerful desktop environments for inferencing, whereas this method outperforms other methods and achieves very good results in real-time.

## Pose Estimation Approaches

✧ A simple way is to detect the person first, then estimate the key points, and lastly estimate the pose for the person. This constitutes a top-down approach.

✧ Another way is to detect the key points first, then group the key points and associate them to a distinct person. This method is known as the bottom-up approach.

## Pose Estimation Models

✧ **Skeleton-based model :** consists of a set of joints (key points) like ankles, knees, shoulders, elbows, wrists, and limb orientations comprising the skeletal structure of a human body.

✧ This model is used both in 2D and 3D human pose estimation techniques because of its flexibility.

## Application of pose estimation

1. Activity Recognition.
2. Motion Capture and Augmented Reality.
3. Training Robots.
4. Motion Tracking for Consoles.


## Challenges

There is a huge variety of challenging difficulties concerning pose estimation.
First of which is a clear image, more often than not the images available are not clear, making it difficult to identify the subjects.

Also, in the case of multiple people present in the image, this becomes an even more difficult task.
In the case of Multi pose estimation, there is the problem of overlapping. Usually, we can see multiple people, and the key points may overlap.