

CSE541 Computer Vision

Weekly Report 2

**Landing Error Scoring System for Basketball: A Computer Vision Approach**

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### **Aim:**

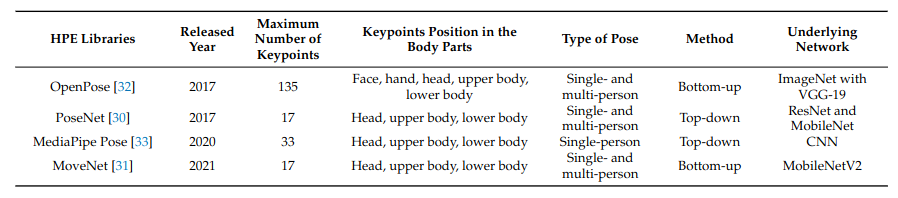
Comparing MediaPipe and OpenPose for pose estimation.

### **Introduction:**

MediaPipe and OpenPose are both widely used Human Pose Estimation (HPE) libraries, especially in Sports Analytics. **[3] [4] [5] [6].** The aim for this week was to take a decision on whether to choose MediaPipe or OpenPose for our work.

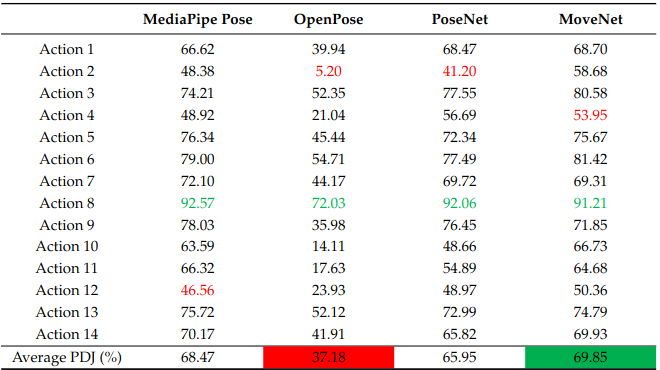
### **Work Completed:**

* We reviewed the existing literature for a detailed comparison of the two leading libraries for HPE. We came across **[1]** which carried out a detailed analysis and comparison of 4 different HPE libraries, MediaPipe and Openpose being a part of that list.



### The above figure from **[1]** shows the specifications of all the four HPE libraries.

* **[1]** has also conducted experimental comparisons between the libraries.



* The above table from **[1]** shows the comparison between total percentage joints detected in different actions. We can clearly see that MediaPipe Pose is outperforming OpenPose in multiple actions and on an average as well.
* However, **[1]** only considered PDJ as a performance metric and there are a lot of underlying nuances of choosing a HPE library.

### **Conclusion:**

After careful consideration, we have decided to go with MediaPipe Pose for the pose estimation. **[2]** is using MediaPipe as well. MediaPipe, as discussed, is lighter on the system and provides definite and reliable outputs. Thus, we came to the conclusion that MediaPipe Pose would be a better choice, given our time and resources

### **Next steps and goals:**

* Applying MediaPipe Pose to the dataset once we get it.
* Annotating the points by using Kinovea.

### **References**

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5. Nguyen, H.T.P.; Woo, Y.; Huynh, N.N.; Jeong, H. Scoring of Human Body-Balance Ability on Wobble Board Based on the Geometric Solution. Appl. Sci. 2022, 12, 5967
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