Develop an accurate model for cricket pose prediction

Challenge Title: IBM Hack Challenge 2022
Project ID : SPS_PRO_2918
Team:

- Kakumanu L V Surya Anil

1. INTRODUCTION

1.1. Overview

A Deep Learning Based solution implemented and deployed in IBM Cloud. This project estimates the cricket pose using the Convolutional Nueral Network.

1.2. Purpose

With the help of this tool cricket association boards can use this for betterment of analyzing the pose of a cricketers while playing the game to identifying the different poses such as cut, sweep, drive, etc.

2. LITERATURE SURVEY

2.1. Existing Problem

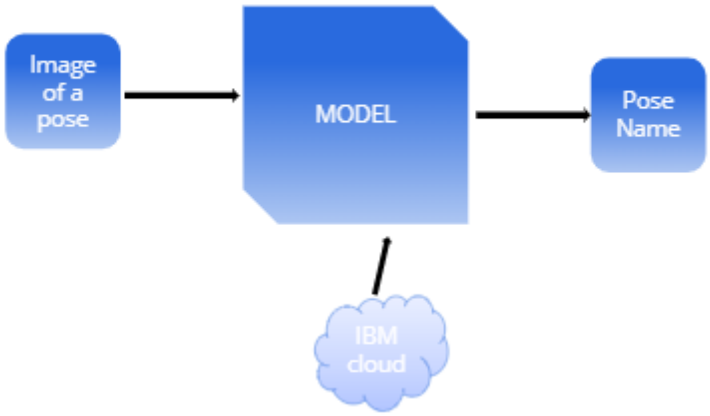
Deep Learning-based approaches have been extensively studied in recent years and used to address several computer vision problems. However, it is sometimes hard to compare these methods due to their intrinsic difference.

2.2. Proposed Solution

Based on these key points we can compare various movements and postures and draw insights. With the help of this tool cricket association boards can use this for betterment of analyzing the pose of a cricketers while playing the game to identifying the different poses such as cut, sweep, drive, bowling action, fielding etc.

3. THEORITICAL ANALYSIS

3.1. Block Diagram

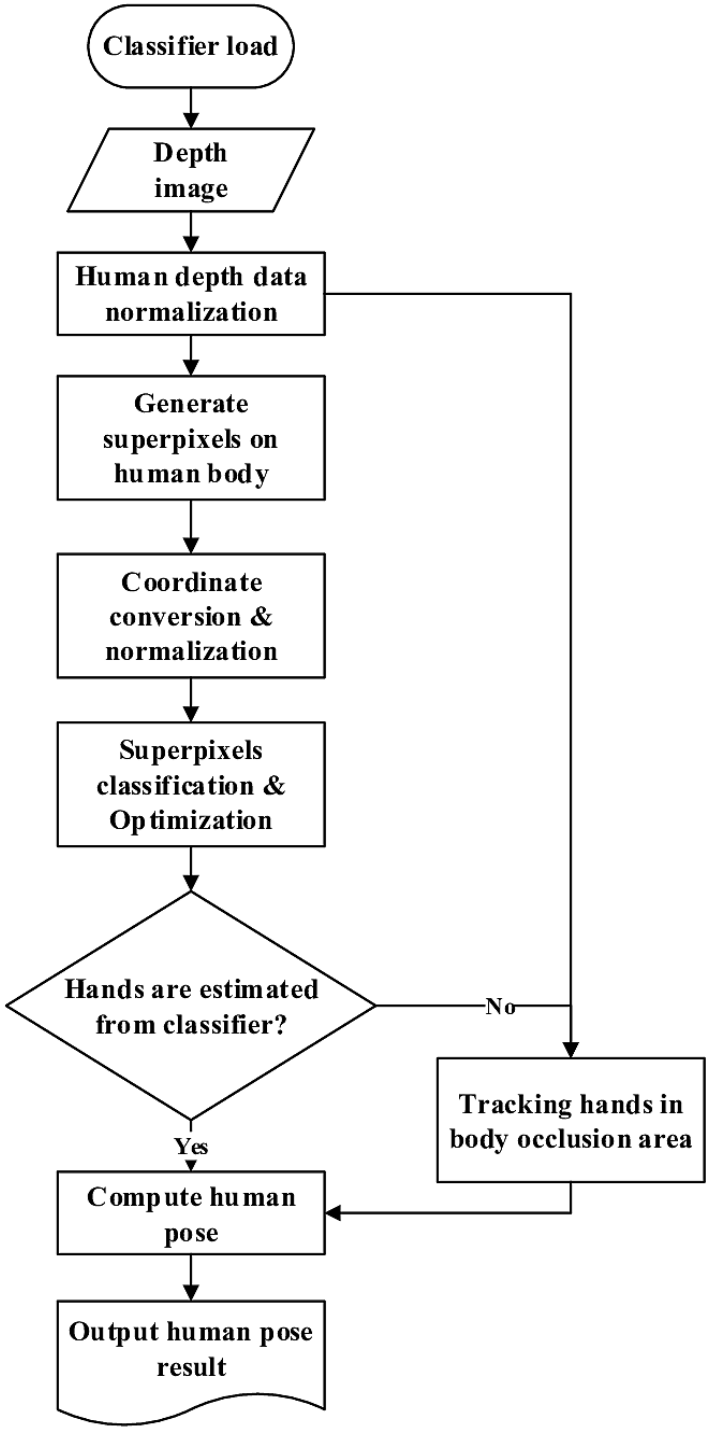


3.2. Hardware / Software designing

4. EXPERIMENTAL INVESTIGATIONS

For understanding the complexity involved in the project and different ways of implementation of the problem, I studied about the different machine Learning and Deep Learning models and advantages with them. After analyzing all the models it is concluded that Convolutional Neural Networks is better for object detection. Computer Vision is a domain of Deep Learning which is used for detection of pose of objects.

5. FLOWCHART


Classifier load
Depth image
Human depth data normalization
Generate superpixels on human body
Coordinate conversion & normalization
Superpixels classification & Optimization
Hands are estimated from classifier?
No
Yes
Tracking hands in body occlusion area
Compute human pose
Output human pose result

6. **RESULT**

Trained the model with the traning dataset containing different cricket poses we got model which predicts the pose accurately. Using test dataset we can verify the poses. The final model gives the output with a accuracy of 72%.

7. **ADVANTAGES & DISADVANTAGES**

- **Using this model we can predict any cricket pose.**
- **we just need to pass the image into the model.**
- **Accuracy of CNN is less because of lesser avilability of input data for training the model.**

8. **APPLICATIONS**

This model can be used by the cricket boards and live broadcasters of the cricket action.

9. **CONCLUSION**

Using this model we can predict the pose of batters and it is useful for aotomation of cricket analysis.

10. **FUTURE SCOPE**

we can extend the project for detection of the pose in a live streaming.

11. **BIBILOGRAPHY**

- https://www.analyticsvidhya.com/blog/2022/03/cricket-shot-classification-using-pose-of-the-player-image/
- https://blog.jovian.ai/detecting-cricket-shots-using-pose-estimation-8e69ed12fe98
- https://cvit.iiit.ac.in/research/projects/cvit-projects/fine-tuning-human-pose-estimation-in-videos
- https://cse.iitk.ac.in/users/cs365/2014/_submissions/javeshg/project/proposal.pdf
- https://cloud.ibm.com/catalog/services/watson-studio
- https://www.ibm.com/docs/en/cloud-paks/cp-data/3.5.0?topic=services-watson-studio