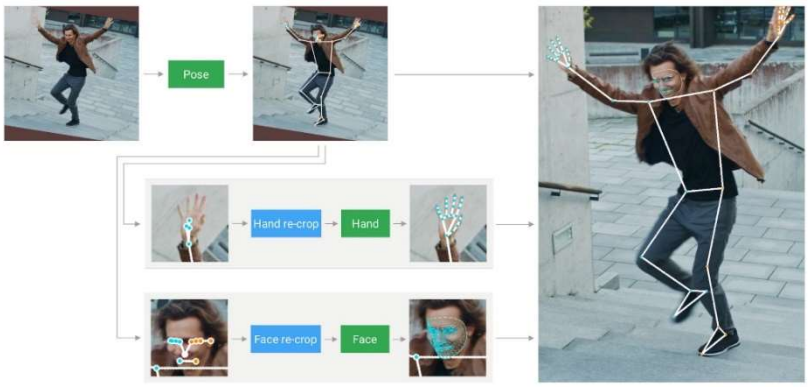
A COMPUTER VISION PROJECT USING GOOGLE MEDIAPIPE

NEED

Live perception of simultaneous human pose, face landmarks, and hand tracking in real-time on mobile devices can enable various modern life applications: fitness and sport analysis, gesture control and sign language recognition, augmented reality try-on and effects. This proposal points out that when this technology is combined with online class, we can create a virtual live demonstration of anything. Let it be using whiteboard to write, using images/videos to explain concepts and so on. With the help of gestures, these can be done just with the action of fingers. This project allows users to draw images and write notes in thin air using their fingers. Therefore, no stylus or pointing-writing-drawing devices required anymore. All you need is a webcam and your hands. This can be done using Google MediaPipe that offers cross-platform, customizable ML solutions for live and streaming media. The proposed system is using the MediaPipe Holistic pipeline as it integrates separate models for pose, face and hand components, each of which are optimized for their particular domain.

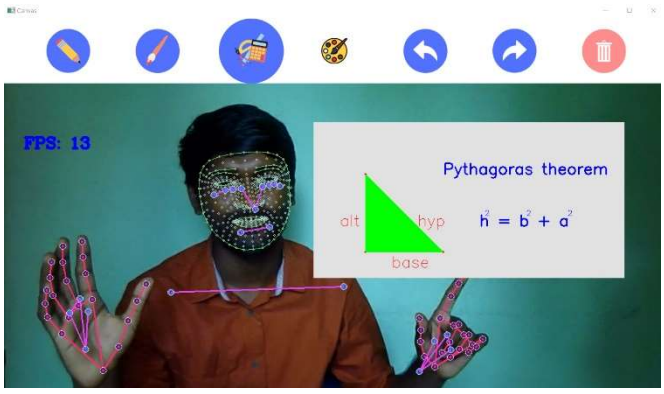


WHAT WE ARE UP TO

- Using OpenCV to track live webcam during online class/presentation.
- This live video will be sent to an application which uses MediaPipe holistic pipeline to create face, pose and hand landmarks to record gestures.
- Certain gestures are already prebuilt into the application. Like to go into the drawing mode or to explain a certain concept etc.
- Based on the user's gestures, respective functions will take place. Therefore, no need of any external hardware.
- With the same gesture control, the user can even create new gestures for new actions.

FEATURES

1. Using real-time video from webcam to read and interpret hand movements as commands.
2. Virtual Whiteboard/Paint where the user can draw or present.
3. Using images/videos and explaining concepts like we have seen in science fiction movies.
4. This project can be used in online meetings or presentations and also by teachers for explaining topics and much more.



POSSIBLE COMPONENTS

1. **Hardware Components**
    a. A working webcam
2. **Software Components**
    a. Python 3.6 or higher
    b. Any web browser (Google Chrome, Mozilla Firefox, Microsoft Edge) or video conference system (Zoom, Microsoft Teams, Skype) for online meetings.

CONCLUSION

This project aims in creating an easy and hectic-free environment for effective meetings and to engage learning by helping users to visualize ideas and to work creatively with notes, shapes and more. The project also facilitates distance learning by running collaborative lessons. I hope that through this project the aim of maximizing learning outcomes for all the knowledge seekers out there is full filled.

ABHIJITH U

RA1931241010017

III BCA A

FSH SRMIST
