A COMPUTER VISION PROJECT USING GOOGLE MEDIAPIPE

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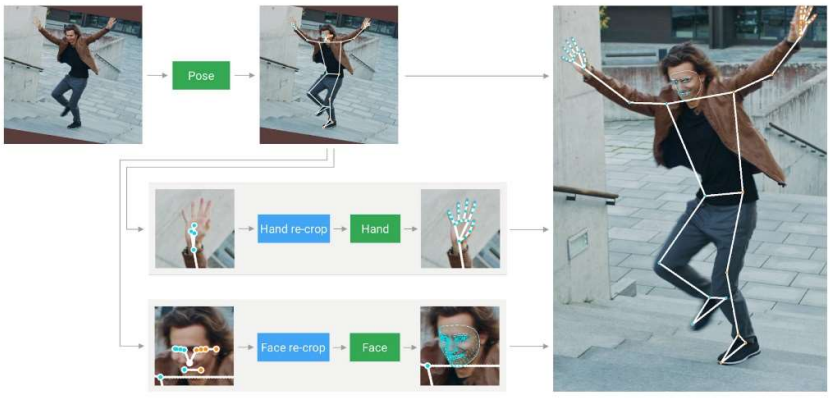
What is Computer Vision?

Computer vision is an interdisciplinary scientific field that deals with how computers can gain high-level understanding from digital images and videos. Computer Vision enables computers and systems to derive meaningful information from these digital images, videos and other visual inputs, and take actions or make recommendations based on that information.

Abstract

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. The project enables this technology combined with whiteboard software features (Microsoft Whiteboard can be taken as an example) creates a VIRTUAL WHITEBOARD that can be controlled using hand gestures. 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. I used the MediaPipe Holistic pipeline as it integrates separate models for pose, face and hand components, each of which are optimized for their particular domain.



Applications:

- Can be used in Online Meetings or Presentations
- Can be used by teachers for explaining topics and much more.

Hardware Requirements:

- A working webcam

Software Requirements:

- Python 3.6 or higher
- Any web browser (Google Chrome, Mozilla Firefox, Microsoft Edge) or video conference software (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.
