HAND GESTURE RECOGNITION

About our project:

Hand gesture recognition is one of the most viable and popular solution for improving human computer interaction. In the recent years it has become very popular due to its use in gaming devices like Xbox, PS4, and other devices like laptops, smart phones, etc. Hand Detection & gesture recognition has usage in various applications like medicine, accessibility support etc.

In this project, we would like to propose on how to develop a hand gesture recognition simulation using OpenCV and python.

Group Members:

Roll Number	Name	Branch	Contribution
102117186	Santosh Rathi	COPC	Implemented the OpenCV library for the project.
102117182	Mrityunjay Pandey	COPC	Sorted the libraries and frameworks required
102103215	Prem Jadwani	COE	Worked on algorithm development
102103280	Eakansh Agarwal	COE	Tried to achieve higher accuracy and better performance
102103301	Suneet Sachan	COE	Researched on how to implement the idea.
102103278	Chirag Gupta	COE	Implemented mediapipe, opencv for this project
102117177	Maninderpal Singh	COPC	Documented the project
102153007	Krishna Khanduja	COE	Worked on algorithm development

Languages, Libraries & Frameworks used:

- OpenCV
- Numpy
- Python3
- Mediapipe

Mediapipe is Google's open-source framework, used for media processing. It is cross-platform or we can say it is   platform friendly. It can run on Android, iOS, and the web that's what Cross-platform means, to run everywhere.

OpenCV is a Python library that is designed to solve computer vision problems. OpenCV supports a wide variety of programming languages such as C++, Python, Java etc. Support for multiple platforms including Windows, Linux, and MacOS.

Algorithm:

- The first thing we do import all the necessary libraries, and then begin with initializing the hand model.
- Capture the frames continuously from the camera using OpenCv and convert BGR image to and RBG image.
- By sending the RGB frame to the mediapipe hand detector, we are able to identify the teh landmarks.
- We locate the forefinger coordinates, find the landmarks.

Images: