# Gesture Based System Control

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# Steps

1. Record using webcam
2. Create a rectangular frame where we detect hand
3. Have a darker background, and then place your hand in the box
4. It recognized the hand based on the color of your hand, one needs to set the range of the hand color using open cv
5. Use contours from OpenCV to count the number of fingers in the sliced hand figure
6. Depending on the no of fingers make the mouse move in a specific direction.
7. When you don't place the hand in the box, you can click right with eye blink
8. For detection of eye blinking, already trained CNN predictor is used with "dlib" in python
9. It detects eye based on first, detection of the facial features and then depending on the area of the eye, it is decided if it is closed then opened, i.e., blinked

# Limitations

- The variation in lightening condition can disturb the detection of fingers
- Facial features detection is based on a already trained CNN model, So the project is bound with its prediction probability
- The project is also limited by the quality of camera used.

# Future Work

- We can incorporate the color detection mechanism with auto tuning for different projects. Example will be discussed.
- We can also design for background detection and thus make it more easier to use at any place Example will be discussed.
- We can also implement different option with combining hand gesture of two hands for more screen control.
- A better facial recognition CNN predictor with better predictability can also be added to increase the efficiency of the application.

# THANK YOU!