# Introduction to OpenCV

OpenCV was started at Intel in 1999 by Gary Bradsky and the first release came out in 2000. Vadim Pisarevsky joined Gary Bradsky to manage Intel's Russian software OpenCV team. In 2005, OpenCV was used on Stanley, the vehicle who won 2005 DARPA Grand Challenge. Later its active development continued under the support of Willow Garage, with Gary Bradsky and Vadim Pisarevsky leading the project. Right now, OpenCV supports a lot of algorithms related to Computer Vision and Machine Learning and it is expanding day-by-day. Currently OpenCV supports a wide variety of programming languages like C++, Python, Java etc and is available on different platforms including Windows, Linux, OS X, Android, iOS etc. Also, interfaces based on CUDA and OpenCL are also under active development for high-speed GPU operations. OpenCV-Python is the Python API of OpenCV. It combines the best qualities of OpenCV C++ API and Python language.

1. Mr. India Cloth (Invisible Cloth)

By using OpenCV with Python, I made Red cloth as invisible cloth. At First, One Clean Plat(as a Background) is obtained from the webcam and after that when red colour is detected in the camera recording screen that was treated as mask. Mask was created with some colour range for red colour in form of HSV colour space. It was created by converting RGB to HSV was used as below:
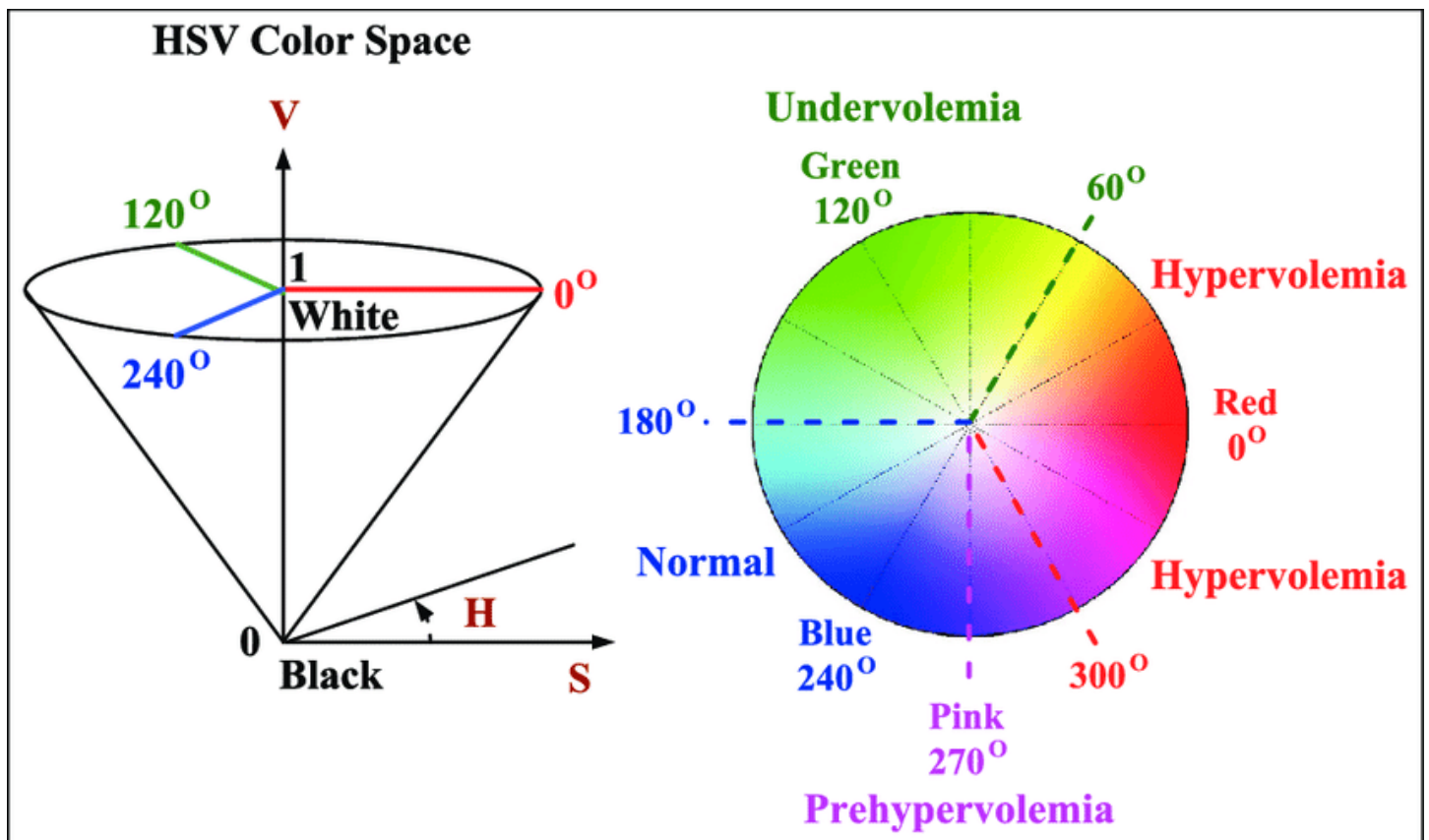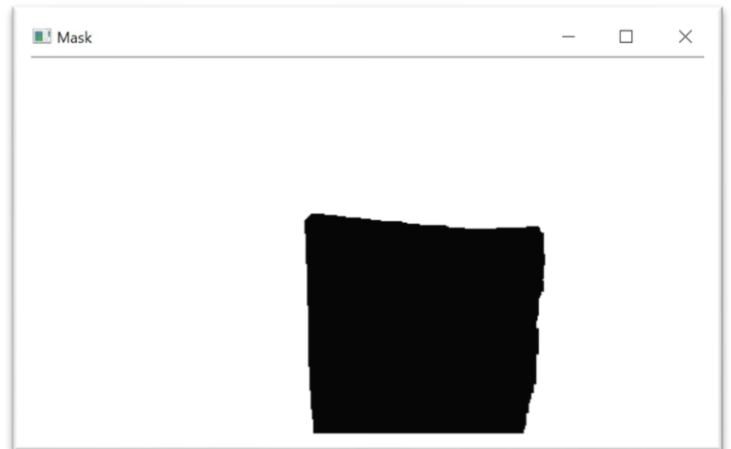
After that all the pixels of mask were Replaced with the Clean plat and User will experience the Invisible his cloth. Demonstration of Mask and other plats are shown below:
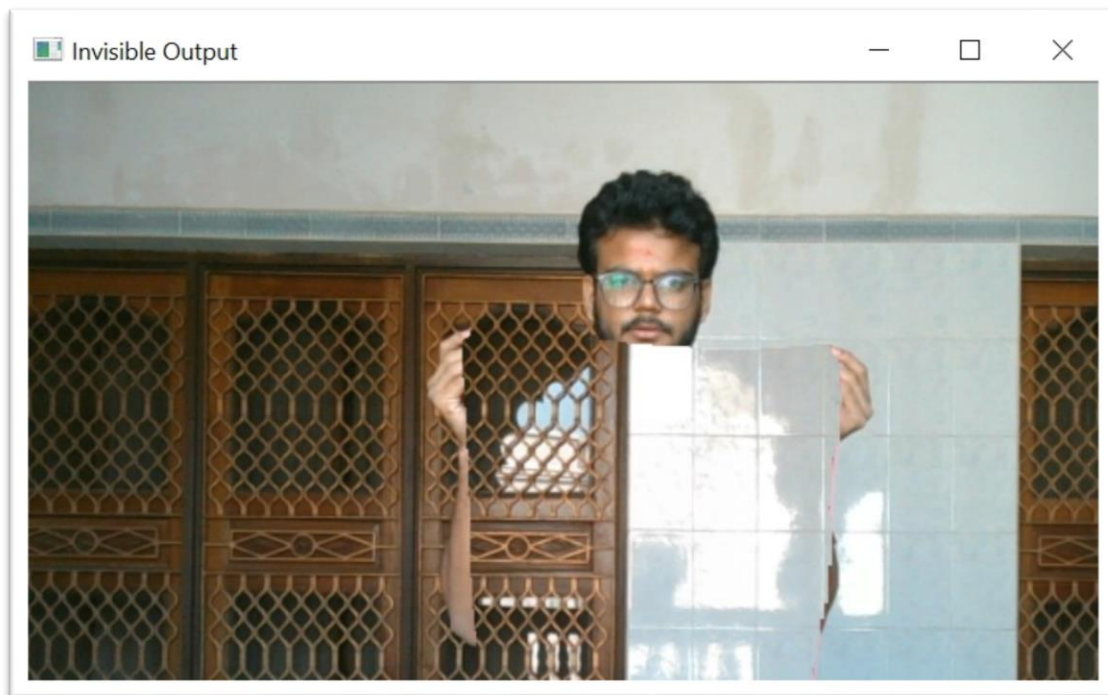
Original Screen
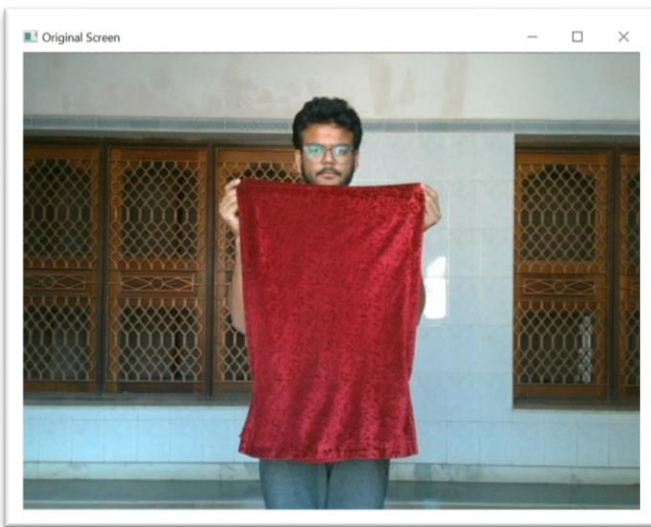
Masked Screen

Output Screen

Colour Ranges used for Redmask:

lower_red = np.array([0,120,70])

upper_red = np.array([10,255,255])

lower_red = np.array([170,120,70])

upper_red = np.array([180,255,255])

2.Blackboard by Webcam

By using OpenCV with Python, I made Blackboard without physical chalk and duster. At First, One Clean Plat(as a White Background) is taken. After that from the webcam where green colour is detected in the webcam screen that was treated as Chalkmask and where pink colour is detected in the webcam screen that was treated as Dustermask. Chalkmask and Dustermask were created with some colour range for green colour and pink colour in form of HSV colour space.

In Realtime, Chalkmask was replacing by black plate and Dustermask was replacing by the white plate. Thus, Blackboard was working with the webcam.

Demonstration Of Blackboard by webcam:
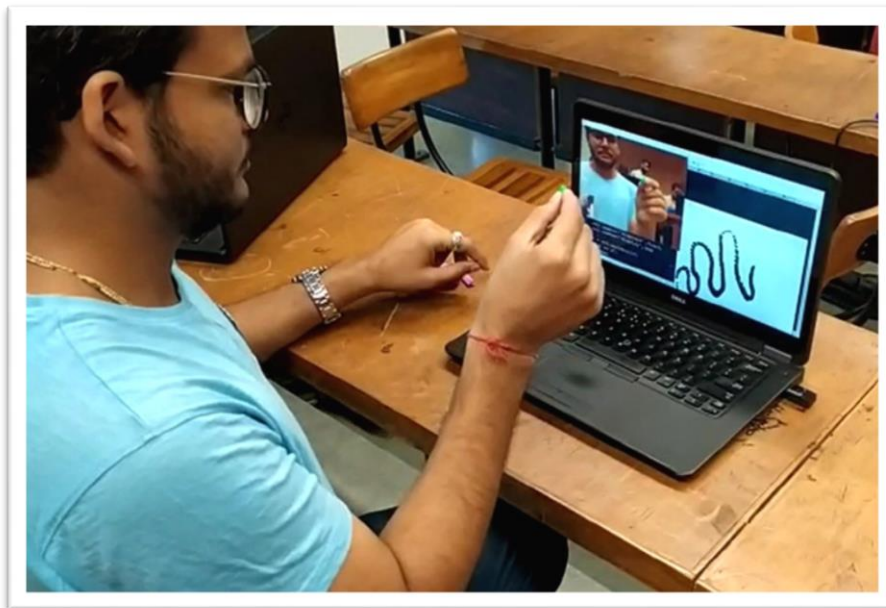
Colour Ranges used for Chalkmask:

Lower_green = np.array([50,50,50])

Upper_green = np.array([80,255,255])

Colour Ranges used for Dustermask:

Lower_pink = np.array([145,50,50])

Upper_pink = np.array([170,255,255])