**Face detetion**

%Detect objects using Viola-Jones Algorithm

%To detect Face

FDetect = vision.CascadeObjectDetector;

%Read the input image

I = imread('s1.jpg');

%Returns Bounding Box values based on number of objects

BB = step(FDetect,I);

figure,

imshow(I); hold on

for i = 1:size(BB,1)

rectangle('Position',BB(i,:),'LineWidth',5,'LineStyle','-','EdgeColor','r');

end

title('Face Detection');

hold off;

**eye**

%To detect Eyes

EyeDetect = vision.CascadeObjectDetector('EyePairBig');

%Read the input Image

I =imread('lena.png');

BB=step(EyeDetect,I);

figure,imshow(I);

figure,imshow(I);

rectangle('Position',BB,'LineWidth',4,'LineStyle','-','EdgeColor','b');

title('Eyes Detection');

Eyes=imcrop(I,BB);

figure,imshow(Eyes);

**mouth**

%Detect objects using Viola-Jones Algorithm

%To detect Face

FDetect = vision.CascadeObjectDetector;

%Read the input image

I = imread('s1.jpg');

%Returns Bounding Box values based on number of objects

BB = step(FDetect,I);

figure,

imshow(I); hold on

for i = 1:size(BB,1)

rectangle('Position',BB(i,:),'LineWidth',5,'LineStyle','-','EdgeColor','r');

end

title('Face Detection');

hold off;

%To detect Mouth

MouthDetect = vision.CascadeObjectDetector('Mouth','MergeThreshold',90);

BB=step(MouthDetect,I);

figure,

imshow(I); hold on

for i = 1:size(BB,1)

rectangle('Position',BB(i,:),'LineWidth',4,'LineStyle','-','EdgeColor','r');

end

title('Mouth Detection');

hold off;

**nose**

%Detect objects using Viola-Jones Algorithm

%To detect Face

FDetect = vision.CascadeObjectDetector;

%Read the input image

I = imread('s1.jpg');

%Returns Bounding Box values based on number of objects

BB = step(FDetect,I);

figure,

imshow(I); hold on

for i = 1:size(BB,1)

rectangle('Position',BB(i,:),'LineWidth',5,'LineStyle','-','EdgeColor','r');

end

title('Face Detection');

hold off;

%To detect Nose

NoseDetect = vision.CascadeObjectDetector('Nose','MergeThreshold',18);

BB=step(NoseDetect,I);

figure,

imshow(I); hold on

for i = 1:size(BB,1)

rectangle('Position',BB(i,:),'LineWidth',3,'LineStyle','-','EdgeColor','b');

end

title('Nose Detection');

hold off;

**video to frame**

a=VideoReader('test.mp4');

for img = 1:a.NumberOfFrames;

filename=strcat('frame',num2str(img),'.jpg');

b = read(a, img);

imwrite(b,filename);

end

**webcam live recorder**

%% Record Video records a Video from the Windows webcam and saves two AVI files

% newfile\_xxx.avi

% video file with frame rate provided by the webcam and system

% AcutalFR\_xxx.avi

% Video file with adjusted frame rate (realtime)

% Frame Rate depends on system and memory

functionRecordVideo()

%% Construct a video input object

vobj = videoinput('winvideo', 1);

%% Get Info about Source and Hardware

% source = getselectedsource(vobj);

% source.FrameRate

% You can use the SupportedFormats to specify the 'format' of the

% videoinput object above

% info = imaqhwinfo('winvideo')

% info.DeviceInfo.SupportedFormats

%% Set Properties for Videoinput Object

vobj.TimeOut = Inf;

vobj.FrameGrabInterval = 1;

vobj.LoggingMode = 'disk&memory';

vobj.FramesPerTrigger = 1;

vobj.TriggerRepeat = Inf;

%% Construct VideoWriter object and set Disk Logger Property

timenow = datestr(now,'hhMMss\_ddmmyy');

v = VideoWriter(['newfile\_', timenow,'.avi']);

v.Quality = 50;

v.FrameRate = 30;

vobj.DiskLogger = v;

% Select the source to use for acquisition.

vobj.SelectedSourceName = 'input1';

%% Preview a stream of image frames.

% Create a customized GUI.

f = figure('Name', 'Video Recording Preview');

uicontrol('String', 'Rec Stop', 'Callback', 'close(gcf)');

% Create an image object for previewing.

vidRes = vobj.VideoResolution;

nBands = vobj.NumberOfBands;

hImage = image( zeros(vidRes(2), vidRes(1), nBands) );

preview(vobj, hImage);

tic

start(vobj)

% Continue recording until figure gets closed

uiwait(f)

%% Stop video

stop(vobj)

% Compute actual Frame Rate

elapsedTime = toc;

framesaq = vobj.FramesAcquired;

ActualFR = framesaq/elapsedTime;

% Delete Object

delete(vobj);

%% Change the Frame Rate to Orinial Value and save it to new video file

% with the same timestamp

ChangeFrameRate(['newfile\_', timenow,'.avi'], timenow, ActualFR)

end

%% This function changes the Frame Rate that the Saved Video is as long as the recording

functionChangeFrameRate(Video, timestr, ActualFR)

% Construct Video Objects

vidObj = VideoReader(Video);

writerObj = VideoWriter(['ActualFR\_', timestr, '.avi']);

writerObj.FrameRate = ActualFR;

% Open Video Writer Object

open(writerObj);

% Read video frames until the end of the file is reached

whilehasFrame(vidObj)

vidFrame = readFrame(vidObj);

writeVideo(writerObj, vidFrame)

pause(1/vidObj.FrameRate);

end

% Close Video Writer Object

close(writerObj);

end

**open webcam live**

mycam = webcam (webcam with properties)

preview(mycam) (open live webcam)

img = snapshot(mycam); ( to click image in live web cam )

image (img)

closepreview(mycam) (close the live webcam)