

# Introduction to OpenCV

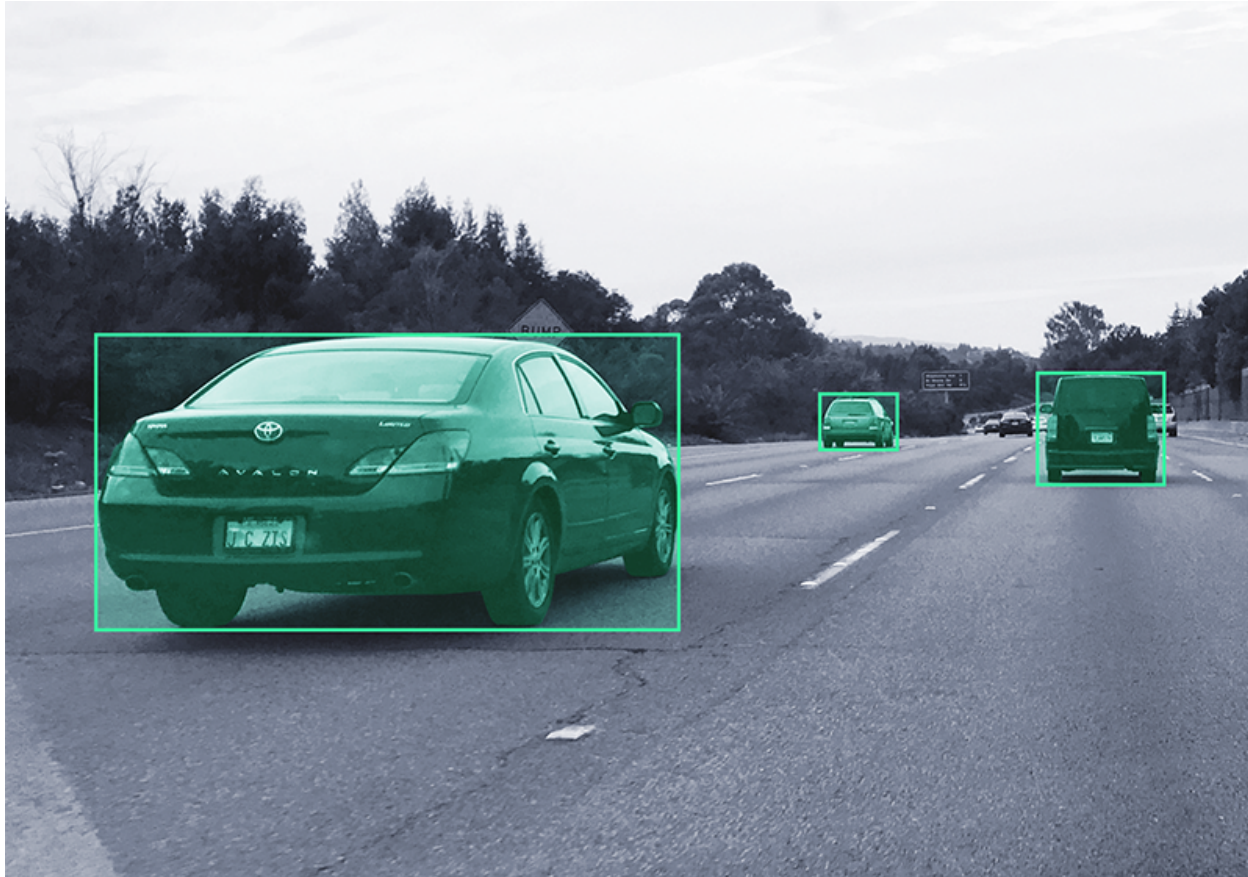
Aswin Babu Karuvally

What is Image Processing?

# Enhancing images

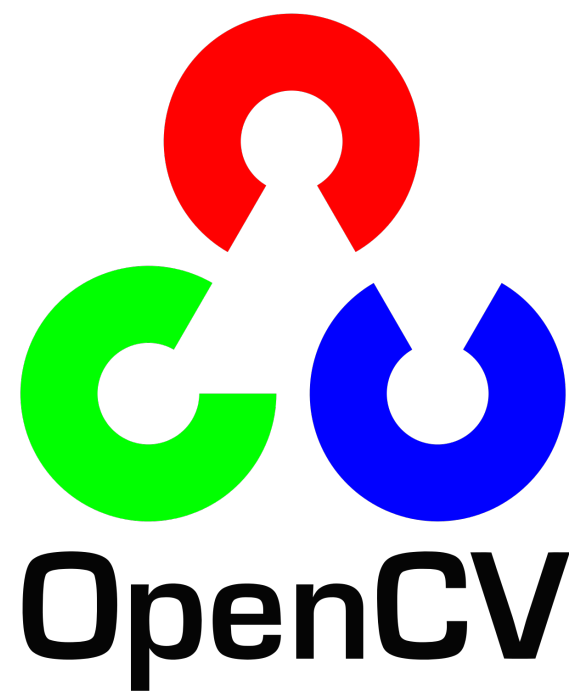


# Processing information



# Computer Vision

How to get started?







# Terminal basics

# Opening the terminal

Alt + F2 and type “gnome-terminal”

# Listing files

`ls`

# Go to a directory

```
cd directory_name
```

# Going back one directory

```
cd ..
```

# Going back to home directory

```
cd
```

Hello World!

# Hello World program

```
#!/usr/bin/env python2
```

```
# prints hello world  
print('Hello World!')
```



# Making the file executable

```
chmod +x file_name
```

# Running the program

```
./file_name
```

# Python interpreter

`python2`

# Variables

# Branching

# Functions

For loop

While loop



# Lists

# Virtual Environment

# Start the virtual environment

```
source bin/activate
```



jupyter

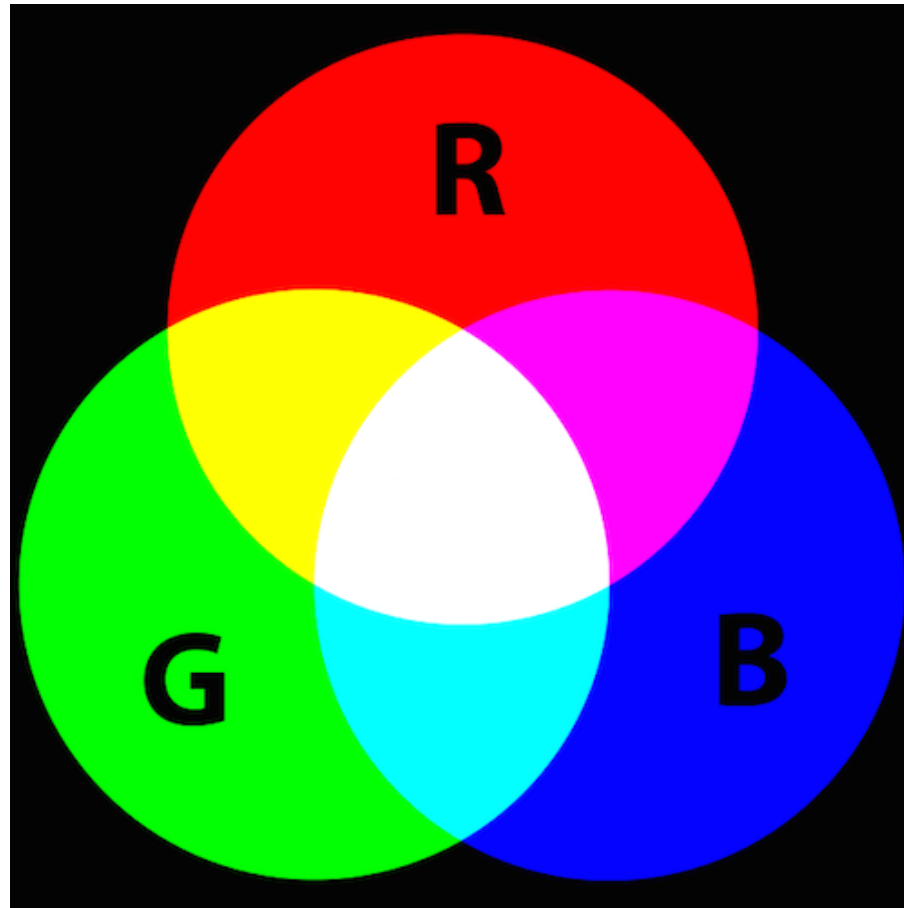
# Start Jupyter notebook

```
jupyter notebook
```

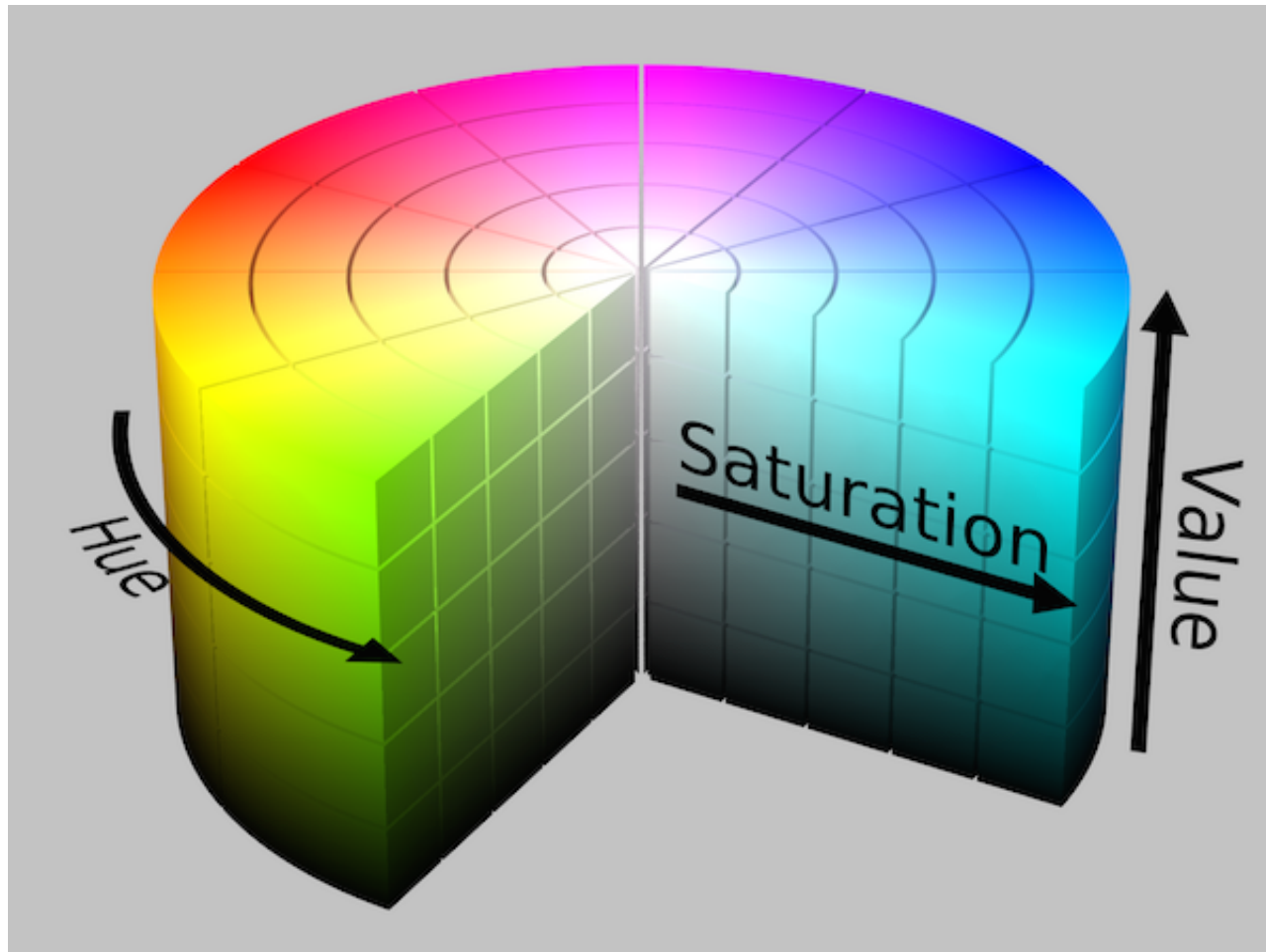
# Loading an image

load\_image.ipynb

# Channels

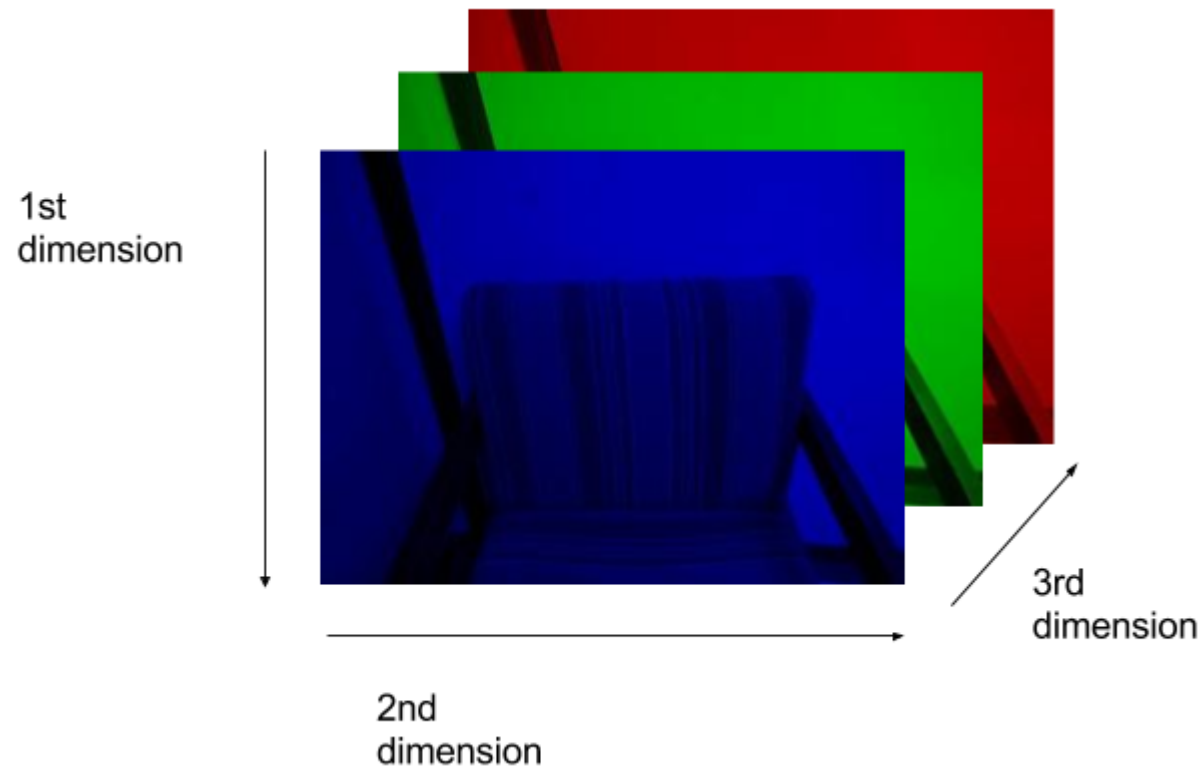


# Hue, Saturation and Value





# Representing an image



# Converting image from BGR to RGB

bgr\_to\_rgb.ipynb

Grayscale

# Converting image to grayscale

grayscale.ipynb

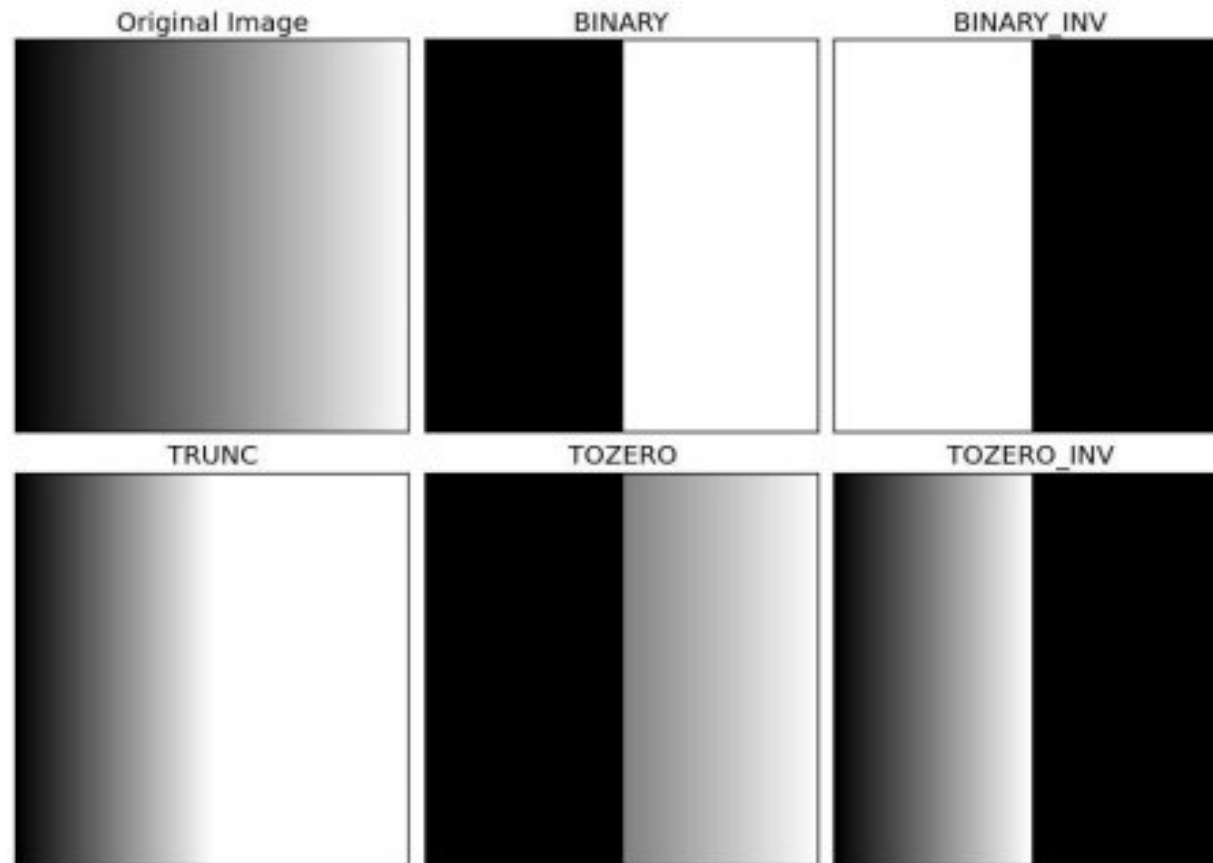
# Segmentation

# Thresholding

# Using threshold

threshold.ipynb

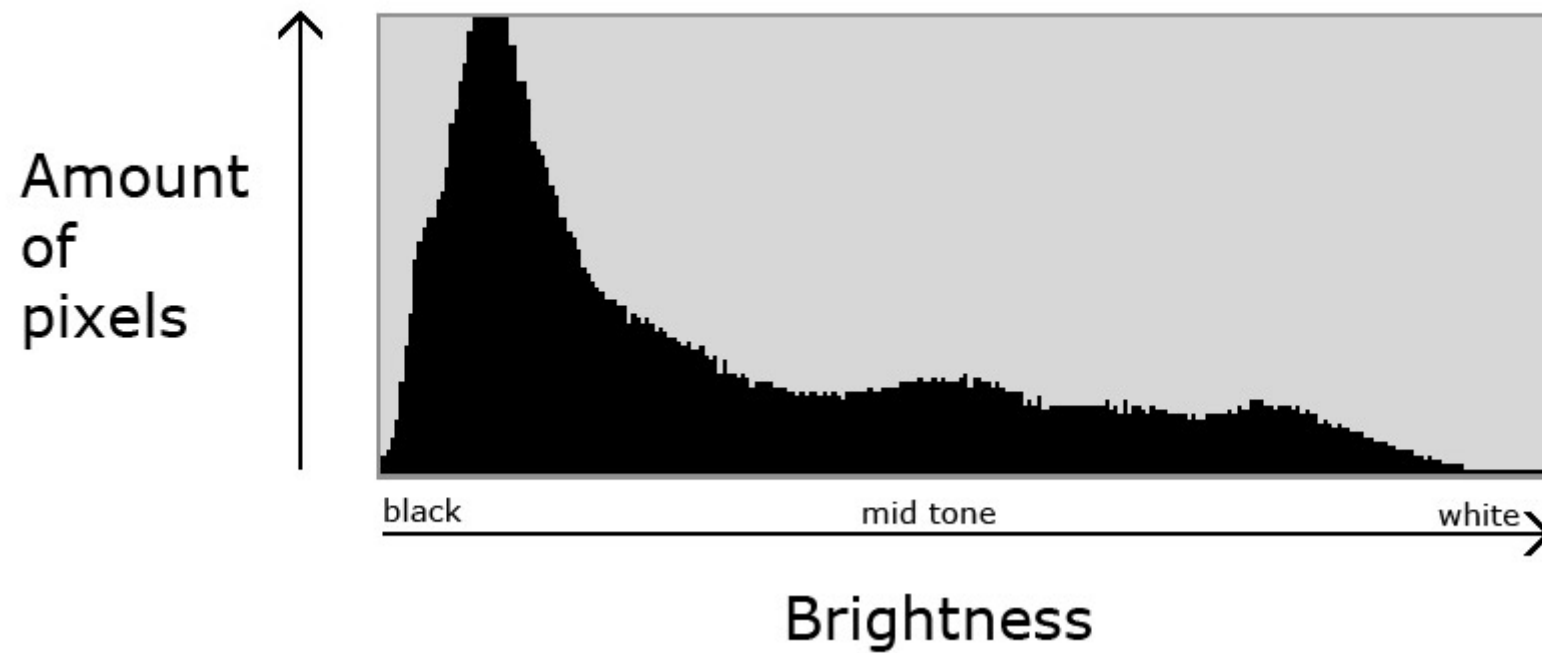
# Thresholding techniques





# Histogram

# A sample histogram



# Segmentation using Hue

# Segmentation using hue

hue\_range.ipynb

Masking

# Performing Masking

mask.ipynb

Blurring

# Performing Gaussian Blur

`blur.ipynb`

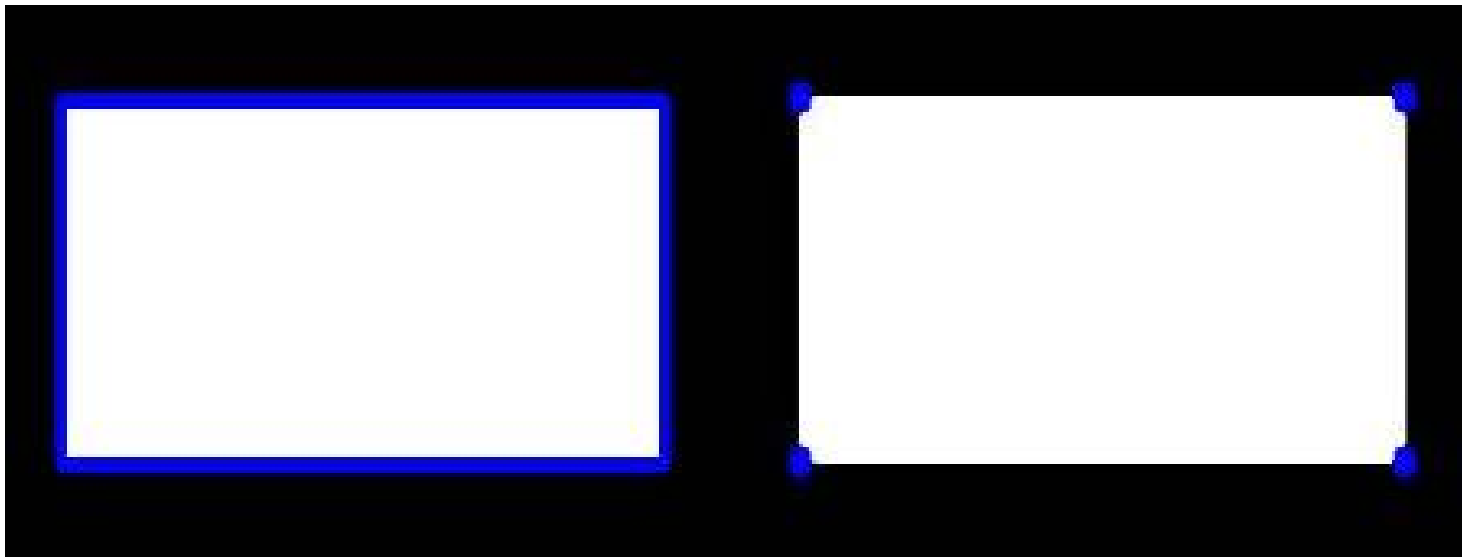


# Detecting Contours

# Detecting contours in an image

`contour.ipynb`

# Contour approximation method



Bounding boxes

# Detecting contours in an image

`bounding_box.ipynb`

Edge detection

# Canny edge detection

canny\_edge.ipynb

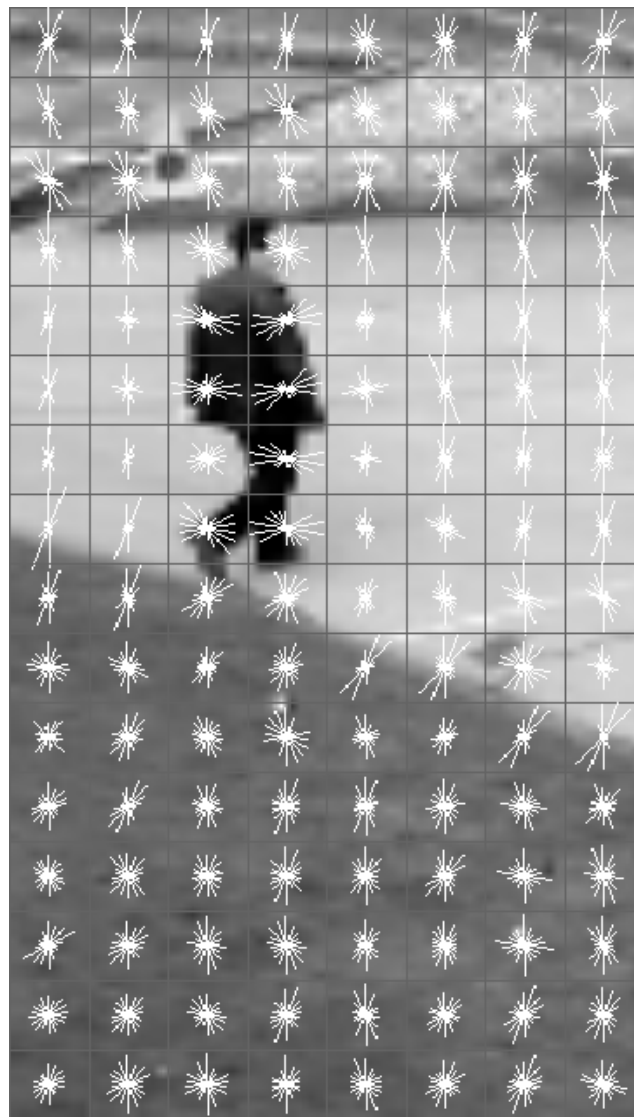
# Pedestrian detection



# Pedestrian detection using HOG

pedestrian.ipynb

# Gradient Orientation



Extracting faces from an image

# Detecting faces from an image

`detect_face.ipynb`

Loading a pre trained model

# Loading a pre trained model

pre\_trained.ipynb

# Useful DNN related web resources

<https://www.pyimagesearch.com/2017/08/21/deep-learning-with-opencv>

<https://github.com/opencv/opencv/tree/master/samples/dnn>

<https://github.com/BVLC/caffe/wiki/Model-Zoo>

Capturing photo from camera



# Capturing photo from camera

camera\_still.ipynb

# Working with Live video

# Working with Live video

video.ipynb

Thank You

# Contact

[aswinbabuk@gmail.com](mailto:aswinbabuk@gmail.com)