

# Image Segmentation

## Session 3

Computer Vision Group  
IIT Madras

December 3, 2014

# Outline

## 1 Recap

## 2 Image Segmentation

## 3 Preprocessing

- Image Gradients
- Canny Edge detection

## 4 Contours

- Finding contours
- Bounding Box

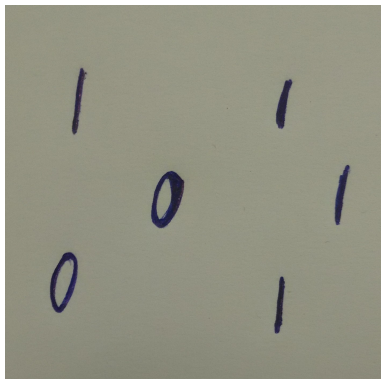
- Image processing

# Recap

- Image processing
- Handwritten digit recognizer

# Preprocessing

## Image Segmentation

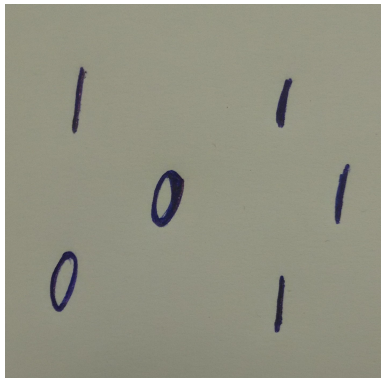


### Goal

Find the position of all digits in the image

# Preprocessing

## Image Segmentation

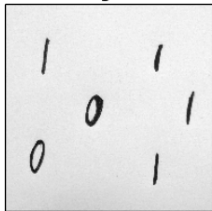


Caution!

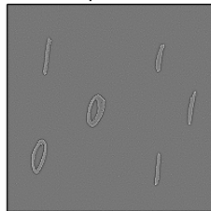
It is not a grayscale image.

# Image Gradients

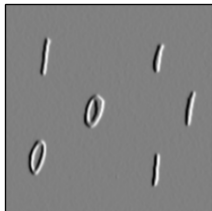
Original



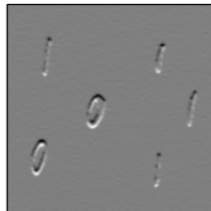
Laplacian



Sobel X



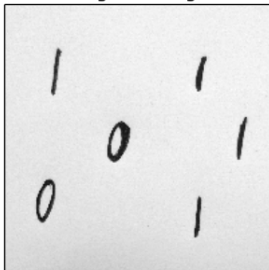
Sobel Y



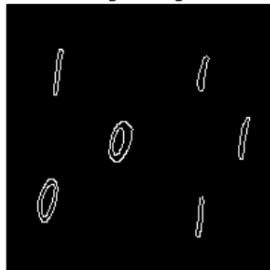
# Canny

## Edge Detection

Original Image

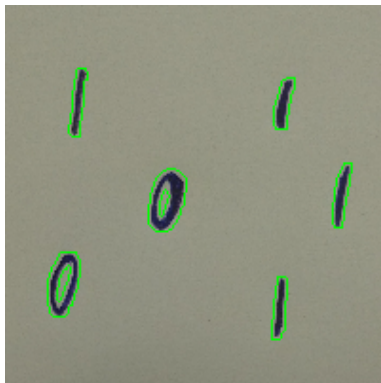


Edge Image

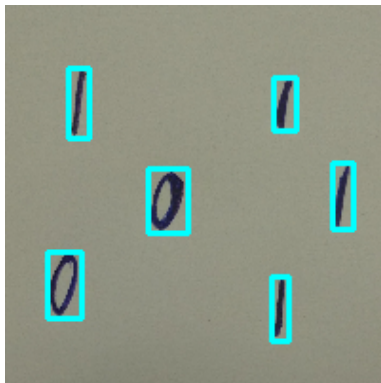




# Finding contours



# Bounding Boxes



# Summary

## Today's session

- Image Gradients
- Edge Detection
- Contours

## Tomorrow's session

Using image transformations.