Image Processing using MATLAB

Introduction PPT

Course Material

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- Course consists of 10 chapters

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- Each chapter consists of 3-4 small lectures
  - Each lecture is provided with a working code and required files for efficient learning

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- Each chapter consists of 3-4 small lectures
  - Each lecture is provided with a working code and required files for efficient learning
- The last chapter presents image processing projects which will help you to put your learning to daily use applications
  - Implement your own face detector and count number of faces in an image
  - Detect and localize a known object in an image

Course Contents

Course Contents

- Chapter 1
  1. Course introduction presentation
  2. MATLAB Image Processing Toolbox basic concepts

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- Chapter 1
  1. Course introduction presentation
  2. MATLAB Image Processing Toolbox basic concepts
- Chapter 2
  1. Read an image
  2. Write an image
  3. Read video from a file
  4. Write video to a file

Course Contents

Course Contents

- Chapter 3
  1. Convert RGB image to Grayscale image
  2. Convert RGB image to HSV image

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- Chapter 3
  1. Convert RGB image to Grayscale image
  2. Convert RGB image to HSV image
- Chapter 4
  1. Plotting histogram of an image
  2. Histogram equalization of Grayscale image
  3. Histogram equalization of RGB image

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Course Contents

- Chapter 5
  1. Image smoothing / blurring basic concepts
  2. Average filtering, Gaussian filtering, Median filtering
  3. Edge preserving blurring using guided image filter

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- Chapter 5
  1. Image smoothing / blurring basic concepts
  2. Average filtering, Gaussian filtering, Median filtering
  3. Edge preserving blurring using guided image filter

- Chapter 6
  1. Edge detection basic concepts
  2. Sobel, Prewitt, Canny methods for edge detection
  3. Sharpening images using Unsharp Masking technique

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- Chapter 7
  1. Image thresholding basic concepts
  2. Program for image thresholding

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- Chapter 7
  1. Image thresholding basic concepts
  2. Program for image thresholding
- Chapter 8
  1. Types of noises and basic concepts
  2. Salt and pepper noise reduction example
  3. Adding artificial noise to images

Course Contents

Course Contents

- Chapter 9
  1. Morphological image operations basic concepts
  2. Image dilation and erosion
  3. Image opening and closing
  4. Extracting binary object boundary example

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- Chapter 9
  1. Morphological image operations basic concepts
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  4. Extracting binary object boundary example
- Chapter 10 : Course Projects
  1. Counting the number of faces in an image

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- Chapter 9
  1. Morphological image operations basic concepts
  2. Image dilation and erosion
  3. Image opening and closing
  4. Extracting binary object boundary example

- Chapter 10 : Course Projects
  1. Counting the number of faces in an image
  2. Object detection and computation of its geometrical properties
  3. Active contour based segmentation of objects in an image