Introduction to Image Processing

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Topic 00
Course Overview

1. Why Image Processing?

• Applications are becoming more frequent and relevant each day.

2. Objective

• Upon successful completion of the course, you will be able to:

1. analyze, propose and implement low level image processing algorithms; and

2. carry out more advanced studies in higher level image processing topics.

3. List of Topics

1. Introduction
2. Digital Image Fundamentals
3. Intensity Transformation and Spatial Filtering
4. Filtering in the Frequency Domain
5. Morphological Image processing
6. Image Segmentation
7. Image Transforms
8. Image Coding
9. Video Coding
10. Image Processing Tools
11. Applications

4. Grade Distribution

3 Programming assignments 30% (individual): 03 July 2017

1) Digital Image Fundamentals, Intensity Transformation and Spatial Filtering

2) Filtering in the Frequency Domain, Morphological Image processing

3) Image Segmentation, Image Transforms, Image Coding

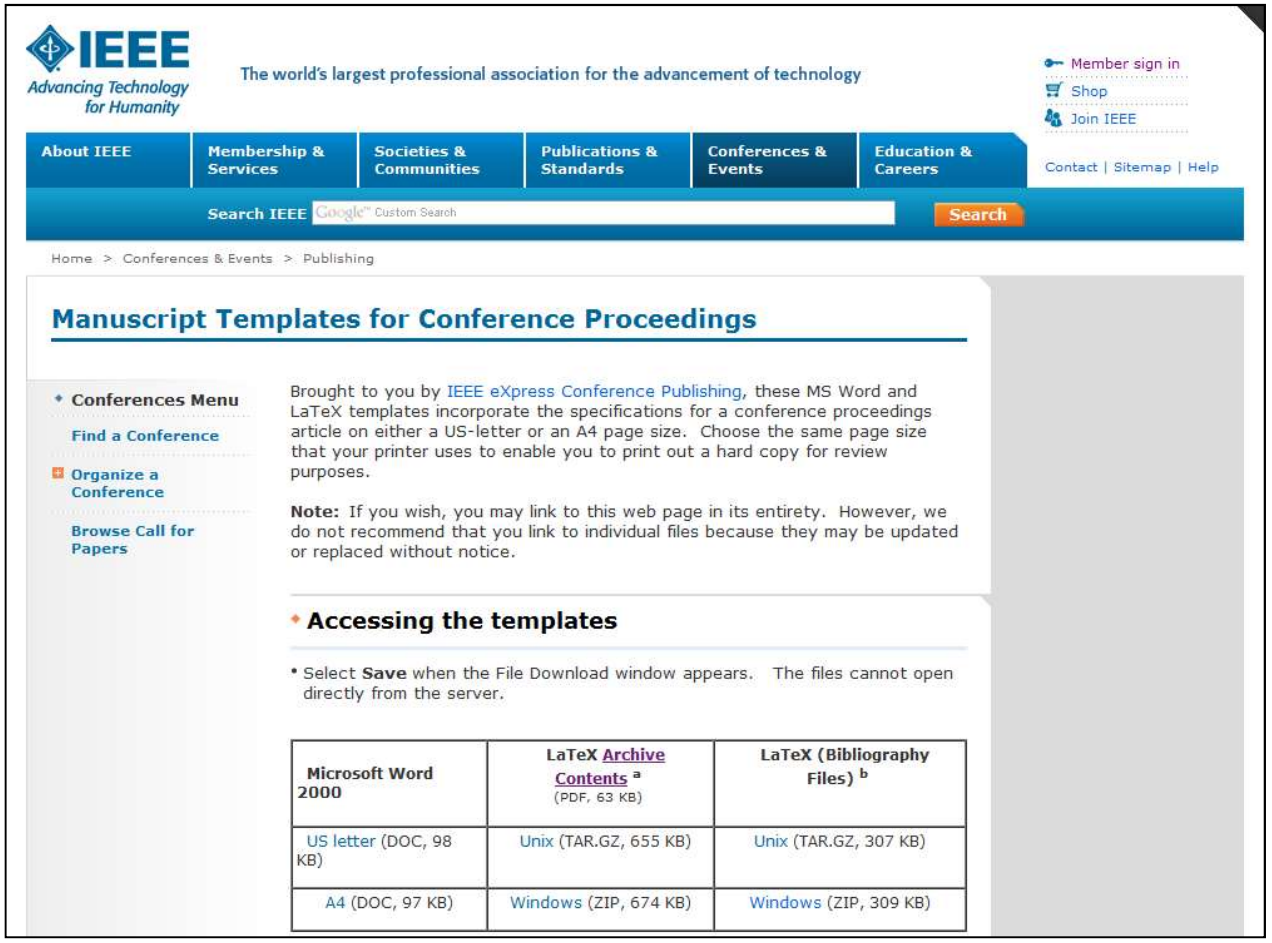
1 Midterm exam 20%

After Morphological Image Processing.

1 Final project 50% (group of two students): 5 July 2017

Defined until Lecture 4.

5. Final Project Report



http://www.ieee.org/conferences_events/conferences/publishing/templates.html

5. Final Project Report

Abstract

1. Introduction
2. Background and Related Work
3. Proposed Solution
4. Experimental Results
5. Conclusion

6. Office Hours

Office hours: Fridays, 2:00pm – 4:00pm
Office location: McConell, TSP Laboratory (734)

7. Slides, Assignments, Codes and Project

- Will be available on:

  https://github.com/zaghetto/ImageProcessing

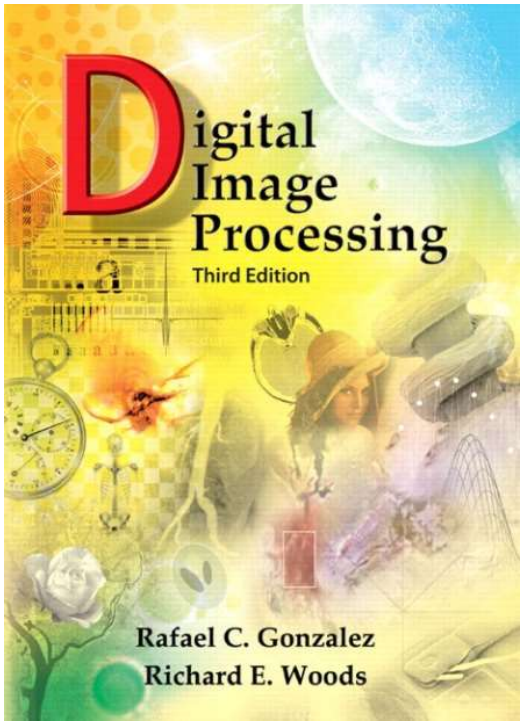
- Must be submitted using myCourse.

8. Tools

- OpenCV (Open Source Computer Vision Library):
  - Is released under a BSD license.
  - It has C++, C, Python and Java interfaces and supports Windows, Linux, Mac OS, iOS and Android.
  - Focus on real-time applications. Written in optimized C/C++
- MATLAB

9. Textbook (not mandatory)

Digital Image Processing, 3rd Edition. Authors: Rafael C. Gonzalez and Richard E. Woods. ISBN-13: 978-0131687288



Sample Book Material
http://www.imageprocessingplace.com/DIP-3E/dip3e_sample_book_material.htm