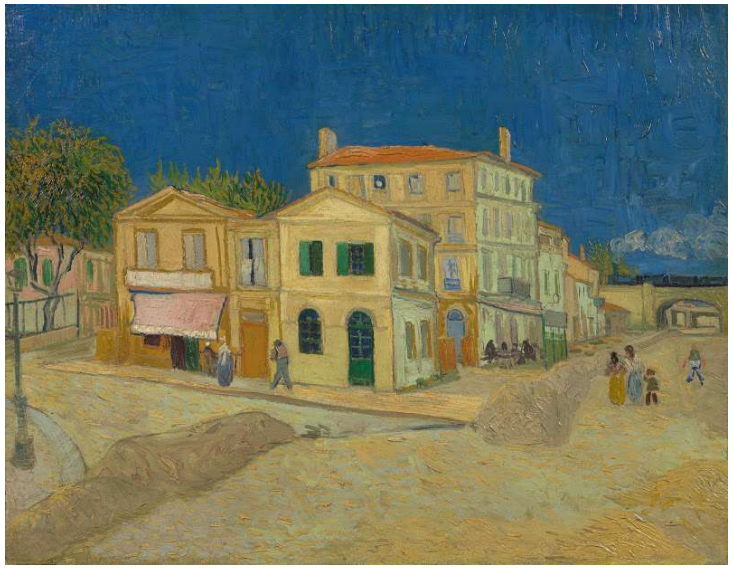
Introduction to Image Processing



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Topic 00
Course Overview
2018/02

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 40% (individual):

1) Assignment 1: September 10, 2018

2) Assignment 2: October 31, 2018

3) Assignment 3: November 02, 2018

1 Final project 40% (groups of two students).

Defined until Lecture 4.
Report: 28/11/2018
Presentations: 28/11, 03/12, 05/12/2018.

1 Final exam 20%: 10/12/2018.

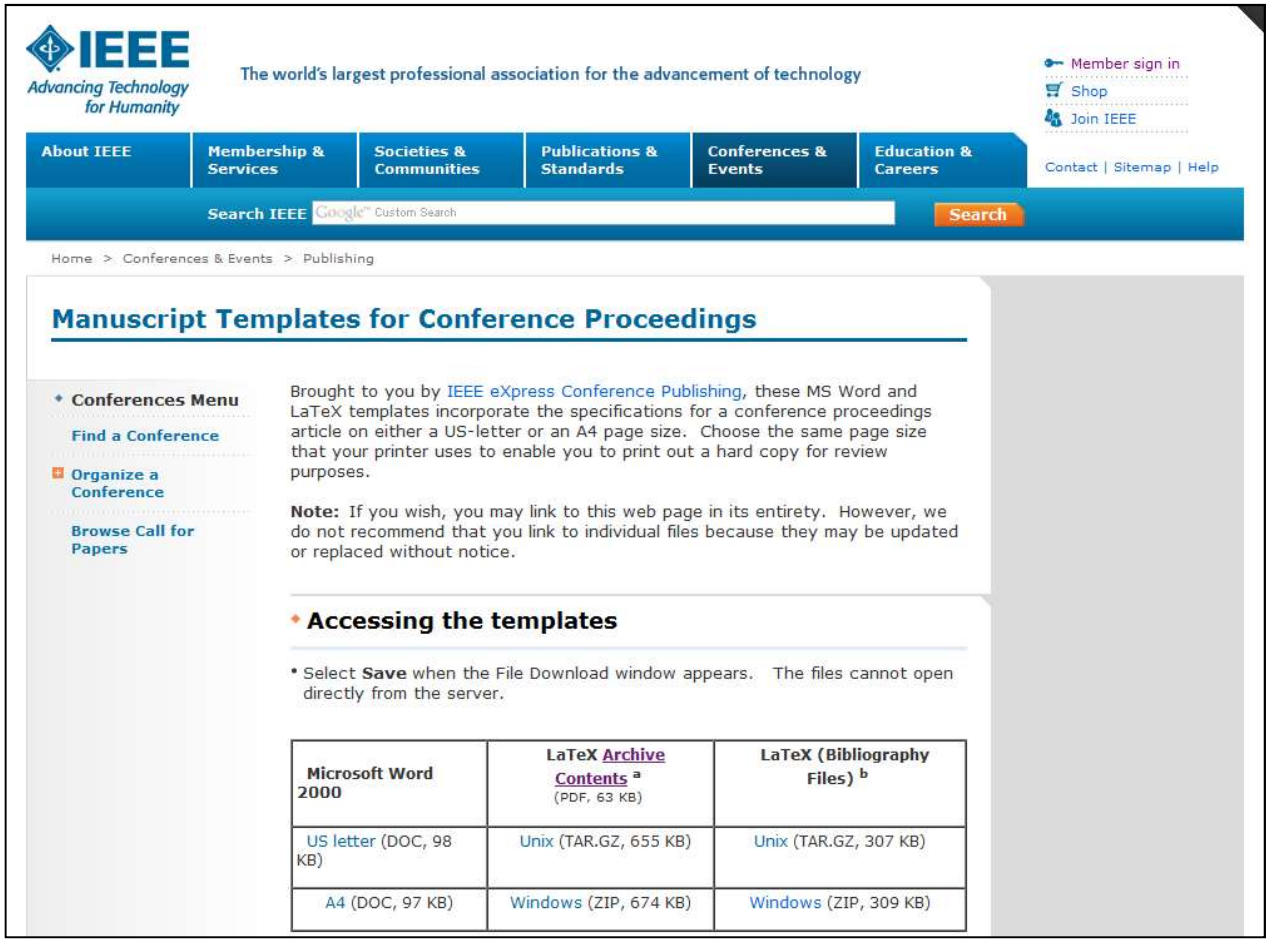
5. Schedule

- First day of class activities: 13/08
- Last day of class activities: 10/12
- Classes:
  - ✓ **August**: 13, 15, 20, 22, 27, 29
  - ✓ **September**: 03, 05, 10, 12
    - ➢ 07 (holiday), 17 - 19 (SBrT)
    - ➢ 24-28 (universitary week)
  - ✓ **October**: 01, 03, 08, 10, 15, 17, 22, 24, 29, 31
    - ➢ 12 (holiday)

5. Schedule

- ✓ **November**: 05, 07, 12, 14, 19, 21, 26, 28
  - ➢ 02 (holiday)
- ✓ **December**: 03, 05
  - ➢ 10, 12 (replacement classes)

6. Final Project Report



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

6. Final Project Report

Abstract

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

7. Office Hours

Office hours: Wednesdays, 20:00pm – 21:00pm
Office location: CIC/EST, Room 15

8. Slides, Assignments, Codes and Project

- Will be available on:

  https://github.com/zaghetto/ImageProcessing

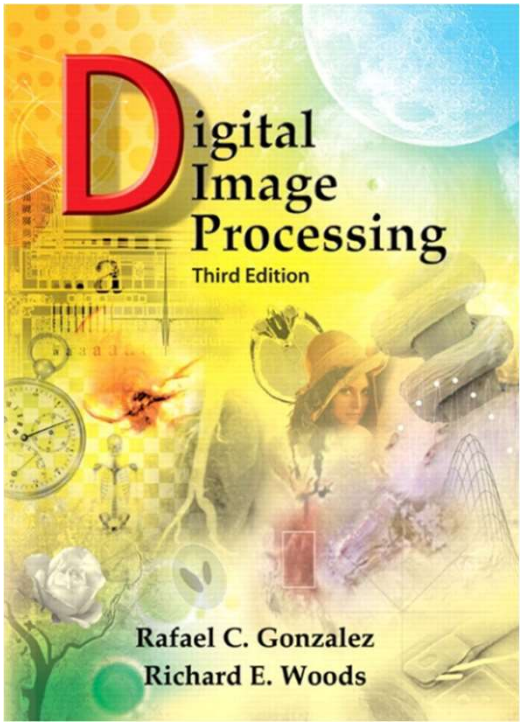
- Must be submitted using Moodle.

8. Tools

- OpenCV
  - ✓ https://opencv.org/
- MATLAB
  - ✓ https://www.mathworks.com/help/images/
- Octave
  - ✓ https://octave.sourceforge.io/image/index.html
- Python
  - ✓ https://scikit-image.org/
  - ✓ http://jupyter.org/
  - ✓ https://www.python.org/

9. Textbook

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