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

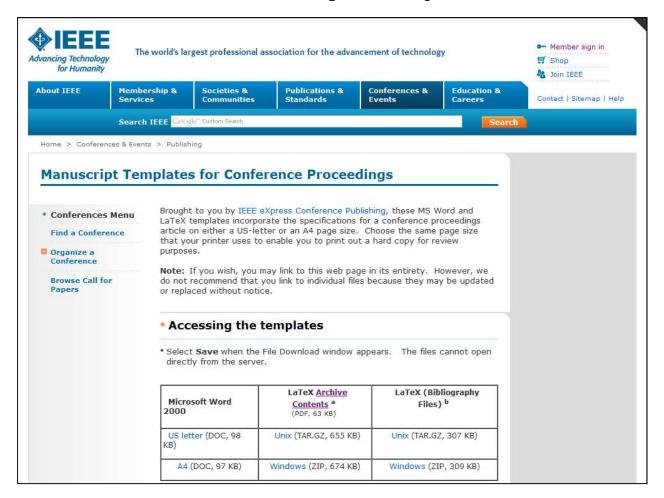
- 3 Programming assignments 30% (individual)
 - 1) Digital Image Fundamentals, Intensity Transformation and Spatial Filtering
 - 2) Filtering in the Frequency Domain, Morphological Image processing
 - 3) Image Segmentation, Image Transforms, Image Coding
- 1 Midterm exam 20%

After Morphological Image Processing.

1 Final project 50% (group of two students)

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, 14:00pm - 16:00pm

Office hours location: McConell, TSP Laboratory (734)

7. Slides, Assignments, Codes and Project

Will be available on:

https://github.com/zaghetto/ImageProcessing

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

