Professor Brendan Morris, SEB 3216, brendan.morris@unlv.edu

ECG782: Multidimensional Digital Signal Processing

Lecture 00
Course Introduction

http://www.ee.unlv.edu/~b1morris/ecg782/

Outline

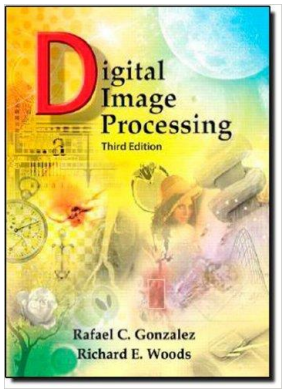
- Course Syllabus
- Grading Explanation
- Software (Matlab/OpenCV) Note

Course Information I

- Instructor
  - Professor Brendan Morris
  - Office: SEB 3216, Hours: M-Th 16:00-17:00
  - Email: brendan.morris@unlv.edu

- Website
  - http://www.ee.unlv.edu/~b1morris/ecg782/
  - Has schedule, lectures, homework, etc.
  - Bookmark it!

Course Information II



- Required Textbook
  - Digital Image Processing, 3rd Edition, Gonzalez and Woods, 2008

- Recommended References
  - Computer Vision: Algorithms and Applications, Szeliski [online]
    - http://szeliski.org/Book/
  - Image Processing, Analysis, and Machine Vision, 4th Edition, Sonka, Hlavac, and Boyle, 2008

Grading I

- Final 15%
- Project 30%
- Midterm 15%
- Homework 25%
- Presentation 15%

- Final
  - Thursday Dec. 15, 18:00-20:00
    - Put date in calendars now – no makeup exams will be given
  - Handwritten notes allowed

Grading II

- Project
  - Each student will do an individual computer vision project
    - Programming done using OpenCV or Matlab (or another language of choice)
  - Grading based on presentation and report (IEEE conference style)
- Homework
  - Approximately 5 assignments + paper reading
  - Due in class and no late assignments accepted
  - Permitted to work with and help one another
    - All assignments must be completed and turned in individually
    - Copying is unacceptable
  - Must use Latex [linux, win] to turn in assignment

Topics

- Imaging properties and mathematics
- Spatial image filtering
- Frequency domain processing
- Morphology
- Feature Detection and Representation
- Segmentation
- Motion estimation
- Object detection
- Object recognition
- Tracking

Software Note

- You are expected to use a image/vision library such as Matlab or OpenCV for homework and projects
- Matlab
  - Available on campus computers [link] with ACE account
  - Student copy is affordable ($99) and very useful
    - Includes Signal Processing and Image Processing Toolboxes among others
  - Many tutorials are available online
    - You'll never go back to a calculator
- OpenCV
  - Open source and cross platform → standard in community for performance development (code faster than Matlab)
  - Can be tricky to get setup and familiar with initially
  - Lots of documentation online however lots of different versions exist which can cause confusion.