ECE418
Introduction to Image and Video Processing
Spring 19

Lecture 1

Lectures: Tu Th 12:30 - 1:50pm 2015 ECEB
Lab: Fr 1-5 pm ENGR 406B1

Instructor: Shuai Huang 124 CSL
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Web Site: https://courses.engr.illinois.edu/ece418/sp2019/

Textbook: Instructor’s notes by Prof. P. Moulin.
The following books are on reserve in the Grainger Library:
M. Ghanbari, Video Coding - an introduction to standard codecs, IEE Telecommunications Series, 1999

Grading (subject to change)
Lab 25%
HW 10% HW usually due on Thursdays
Midterm 1 15%
Midterm 2 15%
Final 35% or 20 %
Optional Project 0 % or 15%
1 Overview of the course

1. Multidimensional Signal Processing (~ 5 lectures)
   Multidimensional Fourier Transform, sampling and filtering (including decimation and interpolation)

2. Human Visual Perception (~ 3 lectures)
   Human Visual System, visual masking, noise visibility, color vision

3. Image Scanning and Display (~ 2 lectures)
   Acquisition and Display of images (camera, digitizers, film, printers); sampling and quantization issues

4. Video Scanning and Display (~ 3 lectures)
   Monochrome and Color TV, videoconferencing, videophone

5. Image Enhancement (~ 4 lectures)
   Contrast and color adjustment, noise reduction, edge enhancement

6. Image Compression (~ 4 lectures)
   How to reduce bit rate while maintaining acceptable quality

7. Video Compression (~ 3 lectures)
   Role of Motion; compression techniques

8. Image Analysis (~ 3 lectures)
   Edge Detection, Texture, Image Segmentation