ECE418
Introduction to Image and Video Processing
Spring 19

Lectures: Tue. Thu. 12:30 PM - 1:50 PM 2015 ECEB
Lab: Fri. 2:00 PM - 6:00 PM ENGR 406B1

Instructor: Shuai Huang (huang816@illinois.edu) 124 CSL
Instructor Office Hours: Mon. 1:30 PM - 3:00 PM 124 CSL
And by appointment (send me email)

Teaching Assistant: Zubin Pahuja (zpahuja2@illinois.edu)
TA Office Hours: Mon. 5:00 PM - 7:00 PM 4036 ECEB

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 in class
Midterm 1 15%
Midterm 2 15%
Final 35% or 20%
Optional Project 0 % or 15%
Exams: Schedule

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<tr>
<th>Exam</th>
<th>Date</th>
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<tr>
<td>Midterm 1</td>
<td>Wed. 02/27/2019</td>
<td>7:00 PM - 8:30 PM</td>
<td>2015 ECEB</td>
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<tr>
<td>Midterm 2</td>
<td>Wed. 04/03/2019</td>
<td>7:00 PM - 8:30 PM</td>
<td>2015 ECEB</td>
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<td>Final</td>
<td>Fri. 05/10/2019</td>
<td>8:00 AM - 11:00 AM</td>
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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