EE 415: Digital Image Processing

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Description: EE 415 Digital Image Processing (3) A study of the computer methods used in processing digital images. Topics include: image acquisition, image enhancement and restoration, image representation, computer image file formats, and image compression. Processing of both monochrome and color images is discussed. Representation and processing of images in the spatial (pixel), frequency and wavelet domains is covered. Prerequisite: EE 310


Required Software:
(1) Octave: Numerical Analysis Software Package (www.gnu.org/software/octave/)
(2) ImageJ: Java Image Processing Program (imagej.nih.gov/ij/)

Grading: Your final grade will be determined from grades on assigned projects and homework.

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<th>Item</th>
<th>Weight</th>
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<tr>
<td>Projects</td>
<td>80%</td>
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<tr>
<td>Homework</td>
<td>20%</td>
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Class Policies: Students are expected to abide by the Academic Honor Code. No aid should be given or requested on any examination. Students may collaborate on homework (in fact, this is encouraged), but each student must submit their own work. Each student is expected to be able to recreate any homework solutions submitted.

Topics:
1) Ch 1 – Introduction
2) Ch 2 – Digital Image Fundamentals
3) Ch 3 – Intensity Transformations and Spatial Filtering
4) Ch 4 – Filtering in the Frequency Domain
5) Ch 5 – Image Restoration and Reconstruction
6) Ch 6 – Color Image Processing

University Objectives
• Students will acquire a depth of knowledge in one or more disciplines of their choice.
• Students will master communication, organizational and critical thinking skills.
• Students will seek and use available resources, including technology, to answer questions and solve problems.

Credit Hour Policy: This course meets the federal requirements of 15 in-class hours plus an expected 30 hours of out-of-class work per credit hour.

Disability Policy: It is the policy and practice of the University of Evansville to make reasonable accommodations for students with properly documented disabilities. Students should contact the Office of Counseling and Health Educations at 488-2663 to seek services or accommodations for disabilities. Written notification to faculty from the Office of Counseling and Health Education is required for academic accommodations.

Class Communication: To receive notifications (class reminders, assignment hints and corrections, answers to exam questions, etc) from the instructor related to this course do one (or both) of the following: (1) text @ue-ee415 to 81010 (or 812-301-1469) to receive notifications by text, (2) send email (empty subject and body are ok) to ue-415@mail.remind.com to receive notifications by email. Alternatively, browse to remind.com/join/ue-ee415 to join OR install the Remind app or your smart phone/pad (Apple, Android) to join and receive notifications. To receive more general notifications from Dr. Richardson (class cancellations, departmental event reminders, winning lottery numbers, etc) please also text @ue-rich to 81010 (or 812-301-1469) or send email to ue-rich@mail.remind.com. Note that I remove all participants from all of my Remind classes at the end of the every semester, so you will need to rejoin the ue-rich class even if you have previously been a member.