Course number: EEE598 (Spring 2016)
Title: Computational Image Understanding and Pattern Analysis
Instructor: Pavan Turaga, (pturaga (at) asu.edu)

<u>Course Objectives and Expected Learning Outcomes</u>
This graduate course introduces students to the field of computer vision, whose broad goal is to create algorithms and systems for processing of visual signals (images, videos etc.) for low-level, mid-level, and high-level perceptual tasks. This course presents the broad principles and techniques for devising computer vision algorithms starting from understanding the imaging process for a pin-hole camera, understanding lenses, image-statistics such as gradients and edges, 3D structure estimation, motion estimation, illumination modeling to perceptual tasks such as shape recognition, texture modeling, face recognition, activity recognition, and scene recognition. The class will be a mixture of in-class lectures and discussions, and individual and group projects.

Textbook:
Computer Vision: Algorithms and Applications by Richard Szeliski available for free at http://szeliski.org/Book/.

Reference Textbooks:
- Computer Vision: A Modern Approach by David Forsyth and Jean Ponce.
- Multiple View Geometry in Computer Vision by Richard Hartley and Andrew Zisserman.
- Pattern Classification by Richard O. Duda, Peter E. Hart and David G. Stork.

<u>Pre-requisites</u>
Undergraduate level linear algebra, signal processing, and probability theory are a plus. However, we plan to keep the course accessible to students from other backgrounds, and will be mostly self-contained.

<u>Grade Policies</u>
The class will consist of individual and group projects.

Project 1	Project 2	Project 3	Class Participation
20%	30%	35%	10%

The later projects especially project 3 is planned to be a group project, where you will be encouraged to clearly define a problem statement, propose a novel solution, and design an implementation.

<u>Attendance Policy</u>

Students are expected to attend all classes. Unexcused absences beyond three will result in a reduction in the student's final grade by one letter grade for every two absences. Tardiness over 10 minutes will be considered an unexcused absence. Attendance will be taken every class, starting the second week of class to allow for new students. If you anticipate having a problem attending class for whatever reason, you are urged to contact the instructor in advance of your expected absence. Absences beyond 6 classes without informing the instructor would result in you being dropped from the course according to ASU rules.

Office Hours
Pavan Turaga - by appointment, please contact us via email to set up appointments in advance.

Academic Dishonesty
All necessary and appropriate sanctions will be issued to all parties involved with plagiarizing any and all course work. Plagiarism and any other form of academic dishonesty that is in violation with the Student Code of Conduct will not be tolerated. For more information, please see the ASU Student Academic Integrity Policy.

Special Accommodations
To request academic accommodations due to a disability; please contact the ASU Disability Resource Center (http://www.asu.edu/studentaffairs/ed/drc/# ; Phone: (480) 965-1234; TDD: (480) 965-9000). This is a very important step as accommodations may be difficult to make retroactively. If you have a letter from their office indicating that you have a disability which requires academic accommodations, in order to assure that you receive your accommodations in a timely manner, please present this documentation to me no later than the end of the first week of the semester so that your needs can be addressed effectively.