Catalog Description: Theory of two-dimensional signals and systems, image transforms, image enhancement, restoration and compression, image analysis and computer vision.

Credits: 3

Prerequisite: EE556 and Matlab

Course Coordinator: Dr. Sunil Kumar, Office: E 202-A; Email: skumar@mail.sdsu.edu

Class Schedule: MW 5:30 – 6:45 pm in E-423B

Office Hours: Office Hours MW 4:30- 5:30 pm and TTh 4:30- 5:30 pm (for other times, please send email for appointment)

Course Learning Outcomes:

1. Learn digital image fundamentals. Write Matlab program to display and manipulate gray scale and color images.
2. Learn principles of various digital image enhancement, noise cleaning, edge detection and morphological processing techniques and their applications.
3. Learn principles of various digital image segmentation, representation and description, and object recognition techniques and their applications.
4. Write Matlab codes to implement the image enhancement, noise cleaning and image detection techniques.
5. Learn the principles of image/video compression.
6. Learn the principles of image watermarking and encryption.


References: Papers given by professor

Topics Covered

1. Digital image fundamentals
2. Image Enhancement and Noise Removal
3. Color image processing
4. Image Segmentation
5. Representation and Description
6. Object Recognition
7. Image Compression

Exams and Grading Policy: There will be an in-class midterm exam and a final exam. If you must miss the in-class exam for some compelling and unavoidable reason, please inform the instructor well in advance so that an early exam can be administered. Please note that the Makeup Exam shall be given only in exceptional situations, with prior permission.

Midterm: Wednesday Oct. 23 (30%; closed book/notes)

Final: Friday, December 13, 3:30 – 5:30 pm (30%, closed book/notes)
Homeworks: 30% (up to 4 assignments involving Matlab)

Project: 10%

Classroom Performance: 5% (bonus for participating in the discussions during lecture)

Written request for regrading the homework and exams must be submitted on the same day they are returned.

The use of laptops, cell phones and other electronic gadgets is not permitted during lectures.

**Plagiarism:** There is strong penalty for cheating and plagiarism in home assignments and exams. Please see SDSU policy for details on cheating and plagiarism.