



E9 241 August 2:1

Digital Image Processing

Instructor

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Teaching Assistant

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Department: Electrical Engineering

Course Time: 5-6.30 PM

Lecture venue: B 306

Detailed Course Page: <https://sites.google.com/site/chandrasedkharSeelamantula/teaching/e9-241-2-1-digital-image-processing>

Announcements

The announcements are related to assignments, class tests, demos, lab sessions, etc. The announcements are made on Piazza.

Brief description of the course

The course is ideal for those who have a background in Digital Signal Processing or Harmonic Analysis. The course covers various aspects of two-dimensional signal processing, the theory, and various applications.

Prerequisites

Digital Signal Processing or Harmonic Analysis

Syllabus

Continuous image characterization, sampling and quantization, 2D Fourier transform and properties, continuous/discrete image processing, rotation, interpolation, image filtering (shift-invariant filters, bilateral filters, nonlocal means), spatial operators, morphological operators, edge detection, texture, 2-D transforms (discrete Fourier transform, discrete cosine transform, Karhunen-Loève transform, wavelet transform), image pyramid, image denoising, segmentation, restoration.

Course outcomes

The students would get a firm foundation in 2-D signal processing and be able to handle real-world image

processing problems and develop image processing software.

Grading policy

Class tests: 30%

Assignments (written and programming): 20%

Finals (theory): 30%

Finals (programming): 20%

Assignments

The assignments include both problem solving and programming components. On the average, there is one assignment every 10 days with a submission time of 10 days.

Resources

Lim J. S., Two-dimensional signal and image processing, Prentice Hall, 1990.

Jain A. K., Fundamentals of digital image processing, Prentice Hall, 1989.

Gonzalez R. C. and Woods R. E., Digital image processing, Prentice Hall, 2008.

Dudgeon D.E. and Merserau R. M., Multidimensional digital signal processing, Prentice Hall Signal Processing Series, 1983.

Augmented by custom-made videos and YouTube videos.