COURSE DESCRIPTION -- "DIGITAL IMAGE PROCESSING (II)"

BACKGROUND:   ECE 643 Digital Image processing (I)

TEXTBOOK: R. C. Gonzalez and R. E. Woods
Y. Q. Shi and H. Sun,
<Image and Video Compression for Multimedia Engineering:

REFERENCES: D. H. Ballard and C. M. Brown, <Computer Vision>,
J. S. Lim, <Two-Dimensional Signal and Image Processing>,

TOPICS: 1. Image compression: coding redundancy, interpixel
redundancy, psychovisual redundancy, quantization,
codeword assignment, waveform coding, transform coding,
image model coding, interframe image coding,
motion compensated coding, multiresolution image coding,
2. Image morphology: dilation, erosion, opening, closing,
hit-or-miss transform, some basic morphological
algorithms, extension to gray-scale images.
3. Image representation and description: chain code,
polygonal approximation, signatures, boundary segments,
the skeleton of a region; shape number, Fourier
descriptors, moments; topological descriptor,
texture; relational descriptors.
4. Image recognition and interpretation: elements of
image analysis; patterns and pattern classes;
decision-theoretic methods, matching, optimum statistical
classifiers, neural networks; structural methods, matching
shape numbers, string matching, syntactic methods;
interpretation, types of knowledge, predicate calculus,
semantic networks, production (experts) systems.

COMPUTER ASSIGNMENTS:
Two or three

GRADING POLICIES:
1. Computer assignments: 15%
2. Homework (given problems): 15%
2. Course project: 20%
3. Final examination: 50%

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