DIGITAL IMAGE PROCESSING

Subject Code: 10IS762
Hours/Week : 04
Total Hours : 52

I.A. Marks : 25
Exam Hours: 03
Exam Marks: 100

PART - A

UNIT – 1   6 Hours
Digitized Image and its properties:
Basic concepts, Image digitization, Digital image properties

UNIT – 2   7 Hours
Image Preprocessing: Image pre-processing: Brightness and geometric transformations, local preprocessing.

UNIT – 3   7 Hours
Segmentation – 1: Thresholding, Edge-based segmentation.

UNIT – 4   6 Hours
Segmentation – 2: Region based segmentation, Matching.

PART – B

UNIT – 5   7 Hours
Image Enhancement: Image enhancement in the spatial domain: Background, Some basic gray level transformations, Histogram processing, Enhancement using arithmetic/ logic operations, Basics of spatial filtering, Smoothing spatial filters, Sharpening spatial filters. Image enhancement in the frequency domain: Background, Introduction to the Fourier transform and the frequency domain, Smoothing Frequency-Domain filters, Sharpening Frequency Domain filters, Homomorphic filtering.

UNIT – 6   6 Hours
Image Compression: Image compression: Fundamentals, Image compression models, Elements of information theory, Error-Free Compression, Lossy compression.

UNIT – 7   7 Hours
Shape representation: Region identification, Contour-based shape representation and description, Region based shape representation and description, Shape classes.

UNIT – 8

6 Hours

Morphology: Basic morphological concepts, Morphology principles, Binary dilation and erosion, Gray-scale dilation and erosion, Morphological segmentation and watersheds

Text Books:

1. Milan Sonka, Vaclav Hlavac and Roger Boyle: Image Processing, Analysis and Machine Vision, 2nd Edition, Thomoson Learning, 2001.
   (Chapters 2, 4.1 to 4.3, 5.1 to 5.4, 6, 11.1 to 11.4, 11.7)
2. Rafel C Gonzalez and Richard E Woods: Digital Image Processing, 3rd Edition, Pearson Education, 2003.
   (Chapters 3.1 to 3.7, 4.1 to 4.5, 8.1 to 8.5)

Reference Books:

1. Anil K Jain, "Fundamentals of Digital Image Processing", PHI, 1997, Indian Reprint 2009.
2. B.Chanda, D Dutta Majumder, "Digital Image Processing and Analysis", PHI, 2002.

GAME THEORY

Subject Code: 10IS763	I.A. Marks : 25
Hours/Week : 04	Exam Hours: 03
Total Hours : 52	Exam Marks: 100

PART - A

UNIT – 1

8 Hours

Introduction, Strategic Games: What is game theory? The theory of rational choice; Interacting decision makers.
Strategic games; Examples: The prisoner's dilemma, Bach or Stravinsky, Matching pennies; Nash equilibrium; Examples of Nash equilibrium; Best-response functions; Dominated actions; Equilibrium in a single population: symmetric games and symmetric equilibria.

UNIT – 2

6 Hours

Mixed Strategy Equilibrium: Introduction; Strategic games in which players may randomize; Mixed strategy Nash equilibrium; Dominated actions; Pure equilibria when randomization is allowed, Illustration: Expert Diagnosis; Equilibrium in a single population, Illustration: Reporting a crime; The

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