Subject Code : QG425C

DIGITAL IMAGE PROCESSING

UNIT – I

Digital Image Representation – Fundamental Steps in Image Processing Elementss of DIP Systems – Digital Image Fundamentals – Visual Perception – Image Model – Sampling and Quantization – Pixel Relationships – Image Geometry – Photographic Film.

UNIT – II

Image Transforms : Fourier Transforms – Discrete Fourier Transforms – Properties of 2D Fourier transforms – FFT – Other Separable Image Transforms – Image Enhancement : Spatial, Frequency – Domain methods – Enhancement by Point Processing - Spatial Filtering – Enhancements in the Frequence domain – Specifications – Color Image Processing.

UNIT – III

Image Restoration : Degradation Model – Diagonalization of Circulant and Block Circular Matrices – Algebraic approach to restoration – Inverse filtering – Wiener filter – Sonatraint Least Square Restoration – Interactive Restoration – Restoration – Restoration in Spatial Domain – Geometric transformation – Image Compression: Fundamentals – Image Compression Models – Elements of Information Theory – Error – Free Compression – Lossy Compression – Image Compression Standards.

UNIT – IV

Introduction to Segmentation – Image representation and Description Representation Schemes – Boundary and Regional descriptors – Morphology – Relational descriptors.

UNIT – V

Recognition and Interpretation : Image Analysis – Patterns and Pattern classes – Decision Theoretic methods – Structural Methods – Interpretation.

Text Book:

Rafael C.Gonzalez & Richard E.Woods, “Digital Image Processing”, Addition Wesley Publication Corporation, 1993.