

Digital Video Processing and Communications

UNIT I – Basic Concepts

Video Formation-Perception – Representation - Color Perception and Specification
Video Capture and Display - Analog Video Raster - Analog Color Television Systems
Digital Video.

Unit II – Video Sampling and Modeling

Fourier Analysis of Video Signals and Frequency Response of the Human Visual System - Video Sampling - Video Sampling Rate Conversion -Video Modeling
Two-Dimensional Motion Estimation - Three-Dimensional Motion Estimation.

Unit III – Video Coding

Foundations of Video Coding - Waveform-Based Video Coding – Content -Dependent Video Coding - Scalable Video Coding - Video Compression Standards.

Unit IV – Video Communications

Error Control in Video Communications - Streaming Video over the Internet and Wireless IP Networks - Determination of Spatial-Temporal Gradients - Gradient Descent Methods.

Unit V – Case Studies

Video Compression System for Mobile Devices, Video Streaming System for Mobile Devices.

References:

1. Yao Wang, Ya-quin Zhang, Joern Ostermann, “ Video Processing and Communications”, Published by Prentice Hall 2001.
2. David Solomon, “Data Compression, the complete reference”, 4th edition, Springer, 2006.
3. Fred Halsall, “ Multimedia Communications: Applications, Networks, Protocols and Standards”, Addison-Wiley, 2001.