

## NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Electrical Engineering - NOC:Image Signal Processing

Subject Co-ordinator - Prof. A. N. Rajagopalan

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Course Introduction  
Lecture 2 - Applications of Image processing  
Lecture 3 - Applications of Image processing (Continued...)  
Lecture 4 - Basics of Images  
Lecture 5 - Shot Noise  
Lecture 6 - Geometric Transformations  
Lecture 7 - Geometric Transformations (Continued...)  
Lecture 8 - Bilinear Interpolation  
Lecture 9 - Geometric Transformations (Continued...)  
Lecture 10 - Projective Transformation  
Lecture 11 - Homography  
Lecture 12 - Homography - Special cases  
Lecture 13 - Computing Homography  
Lecture 14 - RANSAC  
Lecture 15 - Rotational Homography  
Lecture 16 - Research Challenges  
Lecture 17 - Real Aperture Camera  
Lecture 18 - Real aperture camera - Introduction  
Lecture 19 - Cricle of confusion  
Lecture 20 - Depth of field, Linearity  
Lecture 21 - Space-Invariance  
Lecture 22 - 2D Convolution  
Lecture 23 - 2D Convolution  
Lecture 24 - Blur Models  
Lecture 25 - Space-variant Blurring  
Lecture 26 - Shape from X - Introduction  
Lecture 27 - 2-View Stereo  
Lecture 28 - Introduction to Shape from Focus  
Lecture 29 - SFF Principle

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Lecture 30 - Shape from focus - Gaussian fitting  
Lecture 31 - Shape from focus - Focus operators  
Lecture 32 - Shape from Focus - Examples  
Lecture 33 - Shape from Focus - Tensor Voting  
Lecture 34 - DFD Principle  
Lecture 35 - Motion Blur  
Lecture 36 - Image Transforms - Introduction  
Lecture 37 - Image Transforms - Motivation  
Lecture 38 - 1D Unitary Transforms - Introduction  
Lecture 39 - Extending 1D Unitary Transform to 2D - Motivation  
Lecture 40 - Extending 1D Unitary Transform to 2D - Example  
Lecture 41 - Alternative Forms of 2D  
Lecture 42 - Kronecker Product  
Lecture 43 - Kronecker Product - (Example Revisited)  
Lecture 44 - Extending 1D Unitary Transform to 2D - Summary  
Lecture 45 - 1D DFT to 2D DFT  
Lecture 46 - 2D DFT Visualization  
Lecture 47 - 2D DFT - Computation  
Lecture 48 - 1D DCT - Definition, Motivation  
Lecture 49 - Relation to DFT  
Lecture 50 - 2D DCT and Walsh-Hadamard Transform  
Lecture 51 - Data Dependent Transforms, Karhunen Loeve Transform  
Lecture 52 - Karhunen-Loeve Transform (KLT) - Concept  
Lecture 53 - Karhunen-Loeve Transform (KLT) - Applications  
Lecture 54 - Karhunen-Loeve Transform (KLT) - Applications  
Lecture 55 - Singular Value Decomposition (SVD)  
Lecture 56 - Applications of SVD  
Lecture 57 - Change detection  
Lecture 58 - Image Thresholding  
Lecture 59 - Adaptive Local thresholding - Motivation  
Lecture 60 - Chow-Kaneko Local thresholding  
Lecture 61 - K-Means Method  
Lecture 62 - ISODATA Method  
Lecture 63 - Theory of Histogram Equalization and Modification  
Lecture 64 - Histogram Equalization example  
Lecture 65 - Image sequence and Single image filtering in Gaussian noise  
Lecture 66 - Non-local Means Method  
Lecture 67 - Non-local Means Filtering (Examples)  
Lecture 68 - Impulse Noise Generator

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- Lecture 69 - Impulse noise filtering
- Lecture 70 - Transform Domain Filtering
- Lecture 71 - Illumination Handling
- Lecture 72 - Applications of Restoration, and Image Deblurring
- Lecture 73 - Haddamard's conditions and Least squares solution
- Lecture 74 - Min-norm solution and Norm of Linear operator
- Lecture 75 - Numerical stability analysis
- Lecture 76 - Image Deblurring
- Lecture 77 - Tikhonov-Miller Regularization
- Lecture 78 - Conditional Mean as an Estimator
- Lecture 79 - Linear Estimator
- Lecture 80 - Wiener Filter
- Lecture 81 - Fourier Wiener Filter
- Lecture 82 - 1D Superresolution
- Lecture 83 - Superresolution Examples