

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

NPTEL Video Course - Mathematics - NOC:Essential Mathematics for Machine Learning

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Co-ordinating Institute - IIT - Roorkee

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

Lecture 1 - Vectors in Machine Learning
Lecture 2 - Basics of Matrix Algebra
Lecture 3 - Vector Space: Definition and Examples
Lecture 4 - Vector Subspace: Examples and Properties
Lecture 5 - Basis and Dimension
Lecture 6 - Linear Transformations
Lecture 7 - Norms and Spaces
Lecture 8 - Orthogonal Complement and Projection Mapping
Lecture 9 - Eigenvalues and Eigenvectors
Lecture 10 - Special matrices and Properties
Lecture 11 - Spectral Decomposition
Lecture 12 - Singular Value Decomposition
Lecture 13 - SVD: Properties and Applications
Lecture 14 - Low Rank Approximations
Lecture 15 - Python Implementation of SVD and Low - rank Approximation
Lecture 16 - Principal Component Analysis - I
Lecture 17 - PCA: Derivation and Examples
Lecture 18 - Python Implementation of PCA
Lecture 19 - Linear Discriminant Analysis
Lecture 20 - Python Implementation of LDA
Lecture 21 - Least Square Approximation and Minimum Normed Solution
Lecture 22 - Linear and Multiple Regression - I
Lecture 23 - Linear and Multiple Regression - II
Lecture 24 - Logistic Regression - I
Lecture 25 - Logistic Regression - II
Lecture 26 - Classification Metrics
Lecture 27 - Gram Schmidt Process
Lecture 28 - Polar Decomposition
Lecture 29 - Minimal Polynomial and Jordan Canonical Form - I

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Lecture 30 - Minimal Polynomial and Jordan Canonical Form - II
Lecture 31 - Basic Concepts of Calculus - I
Lecture 32 - Basic Concepts of Calculus - II
Lecture 33 - Basic Concepts of Calculus - III
Lecture 34 - Basic Concepts of Calculus - IV
Lecture 35 - Basic Concepts of Calculus - V
Lecture 36 - Calculus in Python
Lecture 37 - Convex Sets and Functions
Lecture 38 - Properties of convex functions - I
Lecture 39 - Properties of Convex functions - II
Lecture 40 - Introduction to Optimization
Lecture 41 - Unconstrained Optimization
Lecture 42 - Constrained Optimization - I
Lecture 43 - Constrained Optimization - II
Lecture 44 - Steepest Descent method
Lecture 45 - Newton's and Penalty function method
Lecture 46 - Optimization using Python
Lecture 47 - Operations on Sets
Lecture 48 - Review on Probability
Lecture 49 - Bayes' theorem and Random variables
Lecture 50 - Expectation and Variance
Lecture 51 - Discrete probability distributions
Lecture 52 - Continuous probability distributions
Lecture 53 - Joint probability distribution and covariance
Lecture 54 - Introduction to SVM
Lecture 55 - Error Minimizing LPP
Lecture 56 - Concepts of Duality
Lecture 57 - Hard Margin classifier
Lecture 58 - Soft margin classifier
Lecture 59 - SVM using Python - I
Lecture 60 - SVM using Python - II