

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

NPTEL Video Course - Mathematics - NOC:Essentials of Data Science With R Software 1: Probability and Statistics

Subject Co-ordinator - Prof. Shalabh

Co-ordinating Institute - IIT - Kanpur

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

Lecture 1 - Data Science - Why, What, and How?
Lecture 2 - Installation and Working with R
Lecture 3 - Installation and Working with R Studio
Lecture 4 - Calculations with R as a Calculator
Lecture 5 - Calculations with Data Vectors
Lecture 6 - Built-in Commands and Bivariate Plots
Lecture 7 - Logical Operators and Selection of Sample
Lecture 8 - Introduction to Probability
Lecture 9 - Sample Space and Events
Lecture 10 - Set Theory and Events using Venn Diagrams
Lecture 11 - Relative Frequency and Probability
Lecture 12 - Probability and Relative Frequency - An Example
Lecture 13 - Axiomatic Definition of Probability
Lecture 14 - Some Rules of Probability
Lecture 15 - Basic Principles of Counting - Ordered Set, Unordered Set, and Permutations
Lecture 16 - Basic Principles of Counting - Combination
Lecture 17 - Conditional Probability
Lecture 18 - Multiplication Theorem of Probability
Lecture 19 - Bayes' Theorem
Lecture 20 - Independent Events
Lecture 21 - Computation of Probability using R
Lecture 22 - Random Variables - Discrete and Continuous
Lecture 23 - Cumulative Distribution and Probability Density Function
Lecture 24 - Discrete Random Variables, Probability Mass Function and Cumulative Distribution Function
Lecture 25 - Expectation of Variables
Lecture 26 - Moments and Variance
Lecture 27 - Data Based Moments and Variance in R Software
Lecture 28 - Skewness and Kurtosis
Lecture 29 - Quantiles and Tschebyschev's Inequality

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- Lecture 30 - Degenerate and Discrete Uniform Distributions
- Lecture 31 - Discrete Uniform Distribution in R
- Lecture 32 - Bernoulli and Binomial Distribution
- Lecture 33 - Binomial Distribution in R
- Lecture 34 - Poisson Distribution
- Lecture 35 - Poisson Distribution in R
- Lecture 36 - Geometric Distribution
- Lecture 37 - Geometric Distribution in R
- Lecture 38 - Continuous Random Variables and Uniform Distribution
- Lecture 39 - Normal Distribution
- Lecture 40 - Normal Distribution in R
- Lecture 41 - Normal Distribution - More Results
- Lecture 42 - Exponential Distribution
- Lecture 43 - Bivariate Probability Distribution for Discrete Random Variables
- Lecture 44 - Bivariate Probability Distribution in R Software
- Lecture 45 - Bivariate Probability Distribution for Continuous Random Variables
- Lecture 46 - Examples in Bivariate Probability Distribution Functions
- Lecture 47 - Covariance and Correlation
- Lecture 48 - Covariance and Correlation \hat{a} • Examples and R Software
- Lecture 49 - Bivariate Normal Distribution
- Lecture 50 - Chi square Distribution
- Lecture 51 - t-Distribution
- Lecture 52 - F-Distribution
- Lecture 53 - Distribution of Sample Mean, Convergence in Probability and Weak Law of Large Numbers
- Lecture 54 - Central Limit Theorem
- Lecture 55 - Needs for Drawing Statistical Inferences
- Lecture 56 - Unbiased Estimators
- Lecture 57 - Efficiency of Estimators
- Lecture 58 - Cram r  Rao Lower Bound and Efficiency of Estimators
- Lecture 59 - Consistency and Sufficiency of Estimators
- Lecture 60 - Method of Moments
- Lecture 61 - Method of Maximum Likelihood and Rao Blackwell Theorem
- Lecture 62 - Basic Concepts of Confidence Interval Estimation
- Lecture 63 - Confidence Interval for Mean in One Sample with Known Variance
- Lecture 64 - Confidence Interval for Mean and Variance
- Lecture 65 - Basics of Tests of Hypothesis and Decision Rules
- Lecture 66 - Test Procedures for One Sample Test for Mean with Known Variance
- Lecture 67 - One Sample Test for Mean with Unknown Variance
- Lecture 68 - Two Sample Test for Mean with Known and Unknown Variances

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Lecture 69 - Test of Hypothesis for Variance in One and Two Samples