

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

NPTEL Video Course - Electrical Engineering - NOC:Stochastic Modeling and the Theory of Queues

Subject Co-ordinator - Prof. Krishna Jagannathan

Co-ordinating Institute - IIT - Madras

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

- Lecture 1 - Review of Probability Theory: Random Variable
- Lecture 2 - Sequence of Random Variables
- Lecture 3 - Laws of Large Numbers and Central Limit Theorem
- Lecture 4 - What is a stochastic process?
- Lecture 5 - Counting Process
- Lecture 6 - Poisson Process - Introduction
- Lecture 7 - Poisson Process - Memorylessness
- Lecture 8 - Poisson Process - Increment properties
- Lecture 9 - Distribution of arrival epoch S_n and $N(t)$ for a Poisson Process
- Lecture 10 - Alternate definitions of a Poisson Process
- Lecture 11 - Merging of Poisson Processes - Part 1
- Lecture 12 - Merging of Poisson Processes - Part 2
- Lecture 13 - Splitting of Poisson Process - Part 1
- Lecture 14 - Splitting of Poisson Process - Part 2
- Lecture 15 - Example: Poisson Splitting
- Lecture 16 - Conditional arrival density and order statistics - Part 1
- Lecture 17 - Conditional arrival density and order statistics - Part 2
- Lecture 18 - Non Homogeneous Poisson Process
- Lecture 19 - Introduction to Queueing (with examples)
- Lecture 20 - Examples: Non homogeneous Poisson process
- Lecture 21 - Examples: Competing Poisson processes
- Lecture 22 - Introduction to Renewal Processes
- Lecture 23 - Strong law for renewal processes
- Lecture 24 - Strong law for renewal processes - Proof
- Lecture 25 - Residual life, age and duration (Time average) - Part 1
- Lecture 26 - Residual life, age and duration (Time average) - Part 2
- Lecture 27 - Renewal Reward Theorem (Time average) - Part 1
- Lecture 28 - Renewal Reward Theorem (Time average) - Part 2
- Lecture 29 - Stopping time

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- Lecture 30 - Wald's Equality
- Lecture 31 - Wald's Equality (Continued...)
- Lecture 32 - Elementary Renewal Theorem
- Lecture 33 - The Renewal Equation
- Lecture 34 - The Renewal Equation (Continued...)
- Lecture 35 - G/G/1 Queue and Little's theorem
- Lecture 36 - Little's theorem
- Lecture 37 - M/G/1 Queue
- Lecture 38 - M/G/1 Queue and PK Formula
- Lecture 39 - M/G/1 Queue and PK Formula (Continued...)
- Lecture 40 - Ensemble rewards - Age and Duration
- Lecture 41 - Ensemble rewards - Age and Duration (Continued...)
- Lecture 42 - Key Renewal Theorem and Ensemble rewards
- Lecture 43 - Introduction to finite state Discrete Time Markov Chains
- Lecture 44 - Class and Types of Classes in a DTMC
- Lecture 45 - Periodicity in a DTMC
- Lecture 46 - Matrix Representation of a DTMC
- Lecture 47 - The long term behaviour of a DTMC
- Lecture 48 - Stationary Distribution and Long term behaviour of a DTMC - Part 1
- Lecture 49 - Stationary Distribution and Long term behaviour of a DTMC - Part 2
- Lecture 50 - Stationary Distribution and Long term behaviour of a DTMC - Part 3
- Lecture 51 - Spectral Properties of Stochastic Matrices - Part 1
- Lecture 52 - Spectral Properties of Stochastic Matrices - Part 2
- Lecture 53 - The Short-term Behaviour of a DTMC
- Lecture 54 - Introduction to Countable-state DTMC
- Lecture 55 - Introduction to Countable-state DTMC (Continued...)
- Lecture 56 - The Strong Markov Property
- Lecture 57 - Renewal Theory applied to DTMC's
- Lecture 58 - Stationary Distribution of a Countable State Space DTMC and Renewal Theory
- Lecture 59 - Stationary Distribution of a Countable State Space DTMC and Renewal Theory (Continued...)
- Lecture 60 - Stationary Distribution and The Steady State Behaviour of a Countable-state DTMC - Part 1
- Lecture 61 - Stationary Distribution and The Steady State Behaviour of a Countable-state DTMC - Part 2
- Lecture 62 - Convergence to Steady State of a Countable-state DTMC (Stochastic Coupling)
- Lecture 63 - The Birth-Death Markov Chains
- Lecture 64 - The Reversibility Markov Chains
- Lecture 65 - The Reversibility Markov Chains (Continued...)
- Lecture 66 - Time Sampled M/M/1 Queue and The Burke's Theorem
- Lecture 67 - Introduction to Continuous Time Markov Chains
- Lecture 68 - Introduction to CTMC (Continued...)

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- Lecture 69 - The Steady State Behaviour of CTMC - Part 1
- Lecture 70 - The Steady State Behaviour of CTMC - Part 2
- Lecture 71 - The Steady State Behaviour of CTMC - Part 3
- Lecture 72 - The Steady State Behaviour of CTMC - Part 4
- Lecture 73 - The chapman-kolmogrov equations for CTMC's
- Lecture 74 - The Birth-Death Continuous time Markov Chains
- Lecture 75 - The Reversibility of Continuous time Markov Chains
- Lecture 76 - Burke's Theorem and the Tandem Queues - Part 1
- Lecture 77 - Burke's Theorem and the Tandem Queues - Part 2
- Lecture 78 - The Jackson Networks - Part 1
- Lecture 79 - The Jackson Networks - Part 2
- Lecture 80 - Semi Markov Processes - Part 1
- Lecture 81 - Semi Markov Processes - Part 2