NPTEL Video Course - Computer Science and Engineering - NOC:Approximation Algorithm

Subject Co-ordinator - Prof. Palash Dey

Co-ordinating Institute - IIT - Kharagpur

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


Lecture 1 - Overview of NP-completeness and How to Tackle It
Lecture 2 - Deterministic Rounding of Linear Program: An Approximation Algorithm for Weighted
Lecture 3 - Overview of LP Duality and Complementary Slackness
Lecture 4 - Dual Rounding: An Approximation Algorithm for Weighted Set Cover
Lecture 5 - Primal dual method for Weighted Set Cover
Lecture 6 - Greedy algorithm for Weighted Set Cover
Lecture 7 - Dual Fitting Analysis of Greedy Set Cover
Lecture 8 - Randomized Rounding Algorithm for Weighted Set Cover
Lecture 9 - Scheduling Jobs with Deadlines and Release Dates on a Single Machine
Lecture 10 - The k-Center Problem
Lecture 11 - Local Search Algorithm for Scheduling Jobs on Multiple Identical Machines
Lecture 12 - Greedy Algorithm for Scheduling Jobs on Multiple Identical Machines
Lecture 13 - Inapproximability of the Traveling Salesman problem
Lecture 14 - 2-Approximation Algorithm for Metric TSP
Lecture 15 - 1.5-Approximation Algorithm for Metric TSP
Lecture 16 - Edge Coloring
Lecture 17 - Pseudo Polynomial Time Algorithm for Knapsack
Lecture 18 - FPTAS for Knapsack
Lecture 19 - PTAS for Minimizing Makespan for Scheduling Jobs on Constant Number of Machines
Lecture 20 - PTAS for Minimizing Makespan for Scheduling Jobs on Parallel Identical Machines
Lecture 21 - PTAS for Minimizing Makespan for Scheduling Jobs on Parallel Identical Machines (Continued...)
Lecture 22 - An APTAS for Bin Packing
Lecture 23 - An APTAS for Bin Packing (Continued...)
Lecture 24 - 2 Factor Approximation Algorithm for Scheduling Unweighted Jobs on a Single Machine
Lecture 25 - 3 Factor Approximation Algorithm for Scheduling Weighted Jobs on a Single Machine
Lecture 26 - A Polynomial Time Separation Oracle for Scheduling Weighted Jobs on a Single Machine
Lecture 27 - 3 Factor Approximation Algorithm for Prize Collecting Steiner Tree
Lecture 28 - 3 Factor Approximation Algorithm for Prize Collecting Steiner Tree (Continued...)
Lecture 29 - A 4 Factor Approximation Algorithm for Uncapacitated Facility Location Problem

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Lecture 30 - A 4 Factor Approximation Algorithm for Uncapacitated Facility Location Problem (Continued...)
Lecture 31 - A 4 Factor Approximation Algorithm for Uncapacitated Facility Location Problem (Continued...)
Lecture 32 - Randomized 1/2 Factor Approximation Algorithm for MAX-SAT and MAX-CUT
Lecture 33 - Derandomization using Method of Conditional Expectation
Lecture 34 - Flipping Biased Coin for Better Than .5 Approximation Algorithm for Max-SAT
Lecture 35 - Randomized Rounding Based (1-1/e) Factor Approximation Algorithm for Max-SAT
Lecture 36 - Best of Two Solutions for Max-SAT
Lecture 37 - Nonlinear Rounding for Max-SAT
Lecture 38 - Randomized Rounding for Prize Collecting Steiner Tree
Lecture 39 - Randomized Rounding for Prize Collecting Steiner Tree (Continued...)
Lecture 40 - Randomized Rounding for Uncapacitated Facility Location
Lecture 41 - Chernoff Bound
Lecture 42 - Chernoff Bound (Continued...)
Lecture 43 - Integer Multicommodity Flow
Lecture 44 - Primal-dual Algorithm for Minimum Weighted Feedback Vertex Set
Lecture 45 - Primal-dual Algorithm for Minimum Weighted Feedback Vertex Set (Continued...)
Lecture 46 - Primal-dual Algorithm for Minimum Weighted Feedback Vertex Set (Continued...)
Lecture 47 - Primal-dual Algorithm for Steiner Forest
Lecture 48 - Primal-dual Algorithm for Steiner Forest (Continued...)
Lecture 49 - Primal-dual Algorithm for Steiner Forest (Continued...)
Lecture 50 - 2-Approximation Algorithm for Multiway Cut
Lecture 51 - 3/2-Approximation Algorithm for Multiway Cut
Lecture 52 - 3/2-Approximation Algorithm for Multiway Cut (Continued...)
Lecture 53 - Approximation Algorithm for Multicut
Lecture 54 - Approximation Algorithm for Multicut (Continued...)
Lecture 55 - Approximation Algorithm for Multicut (Continued...)
Lecture 56 - Introduction to Semidefinite Program
Lecture 57 - SDP Based Approximation Algorithm for Max Cut
Lecture 58 - SDP Based Approximation Algorithm for Max Cut (Continued...)
Lecture 59 - Inapproximability of Scheduling Jobs on Multiple Non-identical Machines
Lecture 60 - Inapproximability of Edge Disjoint Path
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