NPTEL Video Course - Electrical Engineering - NOC:VLSI Physical Design with Timing Analysis

Subject Co-ordinator - Prof. Bishnu Prasad Das

Co-ordinating Institute - IIT - Roorkee

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

Lecture 1 - Introduction to VLSI Design
Lecture 2 - Introduction to VLSI Physical Design
Lecture 3 - Complexity Analysis for Algorithms
Lecture 4 - Graphs for Physical Design
Lecture 5 - Graph searching Algorithms
Lecture 6 - Spanning Tree and Shortest Path Algorithms
Lecture 7 - Overview of Timing Analysis
Lecture 8 - Timing Arcs and Unateness
Lecture 9 - Delay Parameters of a Combinational Circuit
Lecture 10 - Delay Parameters of a Sequential Circuit
Lecture 11 - Timing Analysis in a Sequential Circuit
Lecture 12 - STA in Sequential Circuit with Clock Skew - I
Lecture 13 - STA in Sequential Circuit with Clock Skew - II
Lecture 14 - STA in Sequential Circuit with Clock Jitter
Lecture 15 - STA considering OCV and CRPR (Setup check)
Lecture 16 - STA considering OCV and CRPR (Hold check)
Lecture 17 - STA for Combinational Circuits - I
Lecture 18 - STA for Combinational Circuits - II
Lecture 19 - Introduction to Partitioning - I
Lecture 20 - Introduction to Partitioning - II
Lecture 21 - Partitioning Algorithms
Lecture 22 - Kernighan-Lin (KL) Algorithm
Lecture 23 - Fidduccia-Mattheyeses (FM) Algorithm
Lecture 24 - Introduction to Floorplanning
Lecture 25 - Floorplanning Representations
Lecture 26 - Floorplanning Algorithms - 1
Lecture 27 - Floorplanning Algorithms - 2
Lecture 28 - Pin Assignment and Power - Ground Routing
Lecture 29 - Introduction to Placement

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Lecture 30 - Wirelength estimation techniques
Lecture 31 - Min-cut placement
Lecture 32 - Placement Algorithms
Lecture 33 - Placement algorithms and legalization
Lecture 34 - Introduction to Clock Tree Synthesis
Lecture 35 - Clock Routing Algorithms - I
Lecture 36 - Clock Routing Algorithms - II
Lecture 37 - Clock Routing Algorithms - III
Lecture 38 - Introduction and Optimization Goals - Global Routing
Lecture 39 - Single net routing (Rectilinear routing)
Lecture 40 - Global Routing in the connectivity graph
Lecture 41 - Finding Shortest Paths with Dijkstra's Algorithm
Lecture 42 - Full-Netlist Routing
Lecture 43 - Introduction: Detailed Routing
Lecture 44 - Channel Routing Algorithms - I
Lecture 45 - Channel Routing Algorithms - II
Lecture 46 - Switchbox and Over the cell routing
Lecture 47 - Timing Constraints in latch based system
Lecture 48 - Timing Constraints in Pulsed Latch-based System
Lecture 49 - Time Borrowing in Latch
Lecture 50 - Crosstalk Analysis
Lecture 51 - Standard Cell Library
Lecture 52 - Low Power Cells in Standard Cell Library
Lecture 53 - Sub-threshold Standard Cell Library
Lecture 54 - Timing Library for Standard Cells
Lecture 55 - PDK and Other files
Lecture 56 - Open-Source Tool Installation and Qflow
Lecture 57 - Open-Source tool - YOSYS
Lecture 58 - OpenSTA Static Timing Analyzer
Lecture 59 - OpenROAD Physical Synthesis Flow - I
Lecture 60 - OpenROAD Physical Synthesis Flow - II
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