

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

NPTEL Video Course - Electrical Engineering - NOC:Mapping Signal Processing Algorithms to Architectures

Subject Co-ordinator - Prof. Nitin Chandrachoodan

Co-ordinating Institute - IIT - Madras

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

Lecture 1 - Introduction
Lecture 2 - Review of digital logic
Lecture 3 - Timing and Power in digital circuits
Lecture 4 - Implementation Costs and Metrics
Lecture 5 - Example
Lecture 6 - Example
Lecture 7 - Architecture cost components
Lecture 8 - Examples of Architectures
Lecture 9 - Multi-objective Optimization
Lecture 10 - Number representation
Lecture 11 - Scientific notation and Floating point
Lecture 12 - Basic FIR filter
Lecture 13 - Serial FIR filter architectures
Lecture 14 - Simple programmable architecture
Lecture 15 - Block diagrams and SFGs
Lecture 16 - Dataflow Graphs
Lecture 17 - Iteration period
Lecture 18 - FIR filter iteration period
Lecture 19 - IIR filter iteration period
Lecture 20 - Computation Model
Lecture 21 - Constraint analysis for IPB computation
Lecture 22 - Motivational examples for IPB
Lecture 23 - General IPB computation
Lecture 24 - Sample period calculation
Lecture 25 - Parallel architecture
Lecture 26 - Odd-even register reuse
Lecture 27 - Power consumption
Lecture 28 - Pipelining
Lecture 29 - Time-invariant systems

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- Lecture 30 - Valid pipelining examples
- Lecture 31 - Feedforward cutsets
- Lecture 32 - Balanced pipeline
- Lecture 33 - Retiming basic concept
- Lecture 34 - Retiming basic concept
- Lecture 35 - (Missing Title)
- Lecture 36 - Resource sharing
- Lecture 37 - Changing iteration period
- Lecture 38 - Hardware assumptions and constraint analysis
- Lecture 39 - Mathematical formulation
- Lecture 40 - Examples with formulation
- Lecture 41 - Example
- Lecture 42 - Hardware architecture
- Lecture 43 - Review biquad folding sets
- Lecture 44 - Complete biquad hardware
- Lecture 45 - DEMO
- Lecture 46 - DEMO
- Lecture 47 - Obtaining a folding schedule
- Lecture 48 - ASAP schedule
- Lecture 49 - Utilization Efficiency
- Lecture 50 - ALAP schedule
- Lecture 51 - Iteration period bound and scheduling
- Lecture 52 - Retiming for scheduling
- Lecture 53 - Blocked schedules
- Lecture 54 - Overlapped schedules
- Lecture 55 - Improved blocked schedule
- Lecture 56 - Allocation, Binding and Scheduling
- Lecture 57 - DEMO
- Lecture 58 - DEMO
- Lecture 59 - Scheduling
- Lecture 60 - Example
- Lecture 61 - Heuristic approaches to scheduling
- Lecture 62 - Mathematical formulation
- Lecture 63 - ILP formulation
- Lecture 64 - List scheduling
- Lecture 65 - Hardware model
- Lecture 66 - Force Directed Scheduling
- Lecture 67 - DEMO
- Lecture 68 - DEMO

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Lecture 69 - DEMO
Lecture 70 - Software Compilation
Lecture 71 - Optimization Examples
Lecture 72 - Loop optimizations - 1
Lecture 73 - Loop optimizations - 2
Lecture 74 - Loop optimizations - 3
Lecture 75 - Software pipelining - 1
Lecture 76 - Software pipelining - 2
Lecture 77 - FFT Optimization
Lecture 78 - Demo
Lecture 79 - Background
Lecture 80 - Demo
Lecture 81 - Demo
Lecture 82 - Demo
Lecture 83 - Demo
Lecture 84 - Background
Lecture 85 - On-chip communication basics
Lecture 86 - Many-to-Many communication
Lecture 87 - AXI bus handshaking
Lecture 88 - AXI bus (Continued...)
Lecture 89 - Demo
Lecture 90 - Demo
Lecture 91 - Demo
Lecture 92 - DMA and arbitration
Lecture 93 - Network-on-chip basics
Lecture 94 - NoC - Topologies and metrics
Lecture 95 - NoC - Routing
Lecture 96 - NoC - Switching and flow control
Lecture 97 - Systolic Arrays - Background
Lecture 98 - Systolic Arrays - Examples
Lecture 99 - CORDIC algorithm
Lecture 100 - Parallel implementation of FIR filters
Lecture 101 - Unfolding Transformation
Lecture 102 - Lookahead Transformation
Lecture 103 - Introduction to GPUs and Matrix multiplication