

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

NPTEL Video Course - Computer Science and Engineering - NOC:Introduction to Parallel Programming in OpenMP

Subject Co-ordinator - Dr. Yogish Sabharwal

Co-ordinating Institute - IIT - Delhi

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

- Lecture 1 - Introduction to Parallel Programming
- Lecture 2 - Parallel Architectures and Programming Models
- Lecture 3 - Pipelining
- Lecture 4 - Superpipelining and VLIW
- Lecture 5 - Memory Latency
- Lecture 6 - Cache and Temporal Locality
- Lecture 7 - Cache, Memory bandwidth and Spatial Locality
- Lecture 8 - Intuition for Shared and Distributed Memory architectures
- Lecture 9 - Shared and Distributed Memory architectures
- Lecture 10 - Interconnection networks in Distributed Memory architectures
- Lecture 11 - OpenMP: A parallel Hello World Program
- Lecture 12 - Program with Single thread
- Lecture 13 - Program Memory with Multiple threads and Multi-tasking
- Lecture 14 - Context Switching
- Lecture 15 - OpenMP: Basic thread functions
- Lecture 16 - OpenMP: About OpenMP
- Lecture 17 - Shared Memory Consistency Models and the Sequential Consistency Model
- Lecture 18 - Race Conditions
- Lecture 19 - OpenMP: Scoping variables and some race conditions
- Lecture 20 - OpenMP: thread private variables and more constructs
- Lecture 21 - Computing sum: first attempt at parallelization
- Lecture 22 - Manual distribution of work and critical sections
- Lecture 23 - Distributing for loops and reduction
- Lecture 24 - Vector-Vector operations (Dot product)
- Lecture 25 - Matrix-Vector operations (Matrix-Vector Multiply)
- Lecture 26 - Matrix-Matrix operations (Matrix-Matrix Multiply)
- Lecture 27 - Introduction to tasks
- Lecture 28 - Task queues and task execution
- Lecture 29 - Accessing variables in tasks

Get DIGIMAT For High-Speed Video Streaming of NPTEL and Educational Video Courses in LAN

<http://www.digimat.in>

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

- Lecture 30 - Completion of tasks and scoping variables in tasks
- Lecture 31 - Recursive task spawning and pitfalls
- Lecture 32 - Understanding LU Factorization
- Lecture 33 - Parallel LU Factorization
- Lecture 34 - Locks
- Lecture 35 - Advanced Task handling
- Lecture 36 - Matrix Multiplication using tasks
- Lecture 37 - The OpenMP Shared Memory Consistency Model
- Lecture 38 - Applications finite element method
- Lecture 39 - Applications deep learning
- Lecture 40 - Introduction to MPI and basic calls
- Lecture 41 - MPI calls to send and receive data
- Lecture 42 - MPI calls for broadcasting data
- Lecture 43 - MPI non blocking calls
- Lecture 44 - Application distributed histogram updation
- Lecture 45 - MPI collectives and MPI broadcast
- Lecture 46 - MPI gathering and scattering collectives
- Lecture 47 - MPI reduction and alltoall collectives
- Lecture 48 - Discussion on MPI collectives design
- Lecture 49 - Characterization of interconnects
- Lecture 50 - Linear arrays 2D mesh and torus
- Lecture 51 - d dimensional torus
- Lecture 52 - Hypercube
- Lecture 53 - Trees and cliques
- Lecture 54 - Hockney model
- Lecture 55 - Broadcast and Reduce with recursive doubling
- Lecture 56 - Scatter and Gather with recursive doubling
- Lecture 57 - Reduce scatter and All gather with recursive doubling
- Lecture 58 - Discussion of message sizes in analysis
- Lecture 59 - Revisiting Reduce scatter on 2D mesh
- Lecture 60 - Reduce scatter and Allreduce on the Hypercube
- Lecture 61 - Alltoall on the Hypercube
- Lecture 62 - Lower bounds
- Lecture 63 - Pipeline based algorithm for Allreduce
- Lecture 64 - An improved algorithm for Alltoall on the Hypercube using E-cube routing
- Lecture 65 - Pipeline based algorithm for Broadcast
- Lecture 66 - Introduction to parallel graph algorithms
- Lecture 67 - Breadth First Search BFS using matrix algebra
- Lecture 68 - BFS Shared memory parallelization using OpenMP

Get DIGIMAT For High-Speed Video Streaming of NPTEL and Educational Video Courses in LAN

<http://www.digimat.in>

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

- Lecture 69 - Distributed memory settings and data distribution
- Lecture 70 - Distributed BFS algorithm
- Lecture 71 - Performance considerations
- Lecture 72 - Prims Algorithm
- Lecture 73 - OpenMP based shared memory parallelization for MST
- Lecture 74 - MPI based distributed memory parallelization for MST
- Lecture 75 - Sequential Algorithm Adaptation from Prims
- Lecture 76 - Parallelization Strategy for Prims algorithm
- Lecture 77 - Dry run with the parallel strategy
- Lecture 78 - Johnsons algorithm with 1D data distribution
- Lecture 79 - Speedup analysis on a grid graph
- Lecture 80 - Floyd's algorithm for all pair shortest paths
- Lecture 81 - Floyd's algorithm with 2D data distribution
- Lecture 82 - Adaptation to transitive closures
- Lecture 83 - Parallelization strategy for connected components
- Lecture 84 - Analysis for parallel connected components