I Year II Semester

Code: 17CS262

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PARALLEL ALGORITHMS
(Elective–2)

UNITI: Introduction:

Computational demand in various application areas, advent of parallel processing, terminology-pipelining, Data parallel ism and control parallelism-Amdahl'slaw.

UNITII: Scheduling:

Organizational features of Processor Arrays, Multi processors and multi-computers. Mapping and scheduling aspects of algorithms. Mapping into meshes and hyper cubes-Load balancing-List scheduling algorithm Coffman-graham scheduling algorithm for parallel processors.

UNITIII: Algorithms:

Elementary Parallel algorithms on SIMD and MIMD machines, Analysis of thesealgorithms.MatrixMultiplicationalgorithmsonSIMDandMIMDmodels.FastFourierTransfor malgorithms.Implementation on Hyper cube architectures. Solving linear file-system of equations, parallelizing aspects of sequential methods back substitution and Tridiagonal.

UNITIV: Sorting:

Parallel sorting methods, Odd-even transposition Sorting on processor arrays, Biotonic, merge sort on shuffle - exchange ID , Array processor,2D-Meshprocessor and Hyper cube Processor Array. Parallel Quick-sort on Multi processors. Hyper Quick sort on hypercube multi computers. Parallel search operations. Ellis algorithm and Manber and ladner's Algorithms for dictionary operations.

UNITV: Searching

Parallel algorithms for Graph searching, All Pairs shortest paths and minimum costs panning tree. Parallelization aspects of combinatorial search algorithms with Focus on Branch and Bound Methods and Alpha-beta Search methods.

TEXTBOOKS:
1. Parallel computing theory and practice, MichelJ.Quinn
2. Programming Parallel Algorithms, GuyE.Blelloch, Communications of the ACM