Title: "Distributed graph algorithms with applications to Graph-500 benchmark".

Abstract: Graph500 establishes a large-scale benchmark for data intensive supercomputer applications that have basic graph operations like traversal, distance computation as core components. In this talk, we will focus on different parallel (distributed) algorithms for two well-known problems that constitute the kernels of the Graph500 benchmark: (i) single source shortest path (SSSP) and (ii) breadth first search (BFS). For SSSP, we shall study distributed versions of Dijkstra, Bellman-Ford, and Delta-Stepping algorithms. For BFS, we will show efficient mapping schemes so as to minimize the overheads of synchronizations and inter-node communications. These algorithms have been optimized in IBM Research for massively parallel architectures like BlueGene, and some of results topped the benchmark list in recent past.

Bio: Anamitra is a Research Staff Member in the High Performance Computing group at IBM Research - India. His work mainly involves optimization and parallelization of different scientific applications on massively parallel architectures. Anamitra obtained his doctoral degree in Computer Science and Engineering (CSE) from IIT Delhi, where he worked on approximation algorithms for network design problems. He obtained his M.Tech in CSE from IIT Kanpur and B.E. in CSE from Jadavpur University.