Colloquium

Computer Science Department, Oklahoma State University

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3:30pm - 4:30pm, Thursday, April 30, 2009
214 MSCS, Stillwater; 213 NCB, Tulsa

Universal Traversal Sequences for Undirected Graphs

Abstract

Graph traversal is a fundamental problem in computer algorithms, since it is the natural abstraction of many graph search/exploration/navigation processes. The study of universal traversal sequences is motivated by the complexity of graph traversal. For a connected, d-regular, n-vertex, undirected graph G, let the edges incident with a vertex be given the distinct local labels $0, 1, \ldots, d-1$. A sequence $s = s_1 s_2 \cdots s_k$, where $k \geq 1$ and $s_i \in \{0, 1, ..., d-1\}$ for $i = 1, 2, \ldots, k$, is said to traverse G from a vertex v if, by starting at v and following the sequence s of edge-labels, one can visit all the vertices of G. Call s (d, n)-universal provided that s traverses every connected, d-regular n-vertex graph from every starting vertex. This presentation introduces the combinatorial and probabilistic nature of universal traversal sequences and their length lower and upper bound arguments.

Biography: Dr. Dai is an Associate Professor in Computer Science Department at Oklahoma State University. His research focused on theory of computation and parallel computation. Recently he has expanded his research and teaching interests into computer networks and telecommunications. He received a Ph.D. from the University of Washington in computer science in 1991.