IEEE (United Kingdom and Republic of Ireland Section)

Public Lecture – all welcome

Scalable localized routing in wireless sensor networks

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in the Large Lecture Theatre
The University of Westminster,
115 New Cavendish Street, London W1W 6UW
18.00-19.00, 18th March 2008
Refreshments will be available from 17:15 onwards

Abstract

Sensors need their position information in order to provide useful monitoring information. In a localized routing algorithm, each node forwards the message solely based on the location of itself, its neighbors and destination. Such path based routing provides better fault tolerance than tree maintenance approaches. In this talk a cost to progress ratio framework for designing routing algorithms will be described, and it will be shown that a number of existing schemes are special cases of the design.

The cost depends on metric selected, such as hop count, power, remaining energy, delay, expected hop count (which considers realistic physical layer), etc. Hop count based methods are divided into greedy and recovery schemes. In greedy schemes, each node forwards the message to a neighbour based on the direction, progress or distance criterion. A memoryless (stateless) GFG (greedy-face-greedy) routing algorithm that guarantees delivery (if destination location is accurate) in unit graphs (where nodes can directly communicate if they are within fixed transmission radius) is presented. We also give design guidelines for network layer protocols in sensor networks.

The research is collaborative work with several students and colleagues, and has been published in several papers.

Biography

Ivan Stojmenovic received a Ph.D. degree in mathematics from the University of Zagreb. He has published over 200 different papers and over 30 book chapters, and edited four books on wireless, ad hoc and sensor networks and applied algorithms with Wiley/IEEE. He is currently editor of 15 journals, and founder and editor-in-chief of three journals. He is in the top 0.56% most cited authors in Computer Science (Citeseer 2006). One of his articles was recognized as the Fast Breaking Paper, for October 2003 (the only one for all of computer science), by Thomson ISI Essential Science Indicators. He founded three ongoing workshop series, chaired 25 program committees, is steering committee member of three conferences, chaired more than 20 events, and served in more than 150 program committees. He received a Royal Society Wolfson Research Merit Award to join EECE at University of Birmingham. He has recently been elected an IEEE Fellow (January 2008).