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Reliable broadcasting in heterogeneous wireless networks

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Broadcasting is a fundamental operation in wireless networks and plays an important role in the communication protocol design. Wireless transmissions are unreliable; it is possible for packets to be lost due to interference, transmission errors or collisions. Such losses reduce the delivery ratio (number of nodes that receive the broadcast message). The loss rate can be considerable if high interference exists or if link quality is low. In this presentation, we address the problem of reliable broadcasting in spite of collisions and transmission losses. The aim is not to achieve reliable broadcast to all nodes in the network; rather, the aim is to ensure reliable broadcast to a desired percentage of nodes. We present a geometric based, probabilistic model to predict the optimal transmission range for maximizing 1-hop broadcast coverage in wireless networks as a function of range, sending rate and density. We demonstrate how the adaptation techniques can be incorporated into different broadcasting protocols.

Biography

Vamsi Krishna Paruchuri is an Associate Professor in Computer Science at University of Central Arkansas. His research interests are in the broad area of Ad Hoc Wireless and Sensor Networks, Vehicular Networks and Security. He holds a patent on Privacy Preserving Health Records. He has published over seventy papers in journals and conference proceedings. He is PI of NSF funded grant. He served as Technical Program Chair in over twenty different major conferences sponsored by IEEE, ACM and others. He received his PhD in computer science from Lousiana State University and his MS in Electrical Engineering from Ohio State University.

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