

学术报告会

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地点：电院群楼2-410会议室

Research Challenges in Low-Duty-Cycle

Wireless Networks

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Abstract:

Wireless networks have been widely adopted for Internet accesses, location-aware service, peer-to-peer data sharing and remote wireless sensing. For decades, many researchers have been focusing on wireless networks in which devices are assumed to be ready to receive incoming packets, ignoring the fact that idle listening dominates energy consumption, especially in emerging low-rate low-power wireless transceivers (e.g., 802.15.4). To reduce the energy costs of idle listening, a device has to reduce its duty-cycle by sampling RF channels very briefly and shutting down for long periods. At any given time, this type of network is actually fragmented and network connectivity becomes intermittent, wherein a sender suffers sleep latency. This talk introduces the latest development in low-duty-cycle networking research with the focus on how to optimize networking performance (e.g., delay, reliability, and cost) in the presence of sleep latency, unreliable links and dynamic energy availability.

Biography:

Dr. Tian He is currently an associate professor in the Department of Computer Science and Engineering at the University of Minnesota-Twin City. He received the Ph.D. degree under Professor John A. Stankovic from the University of Virginia, Virginia in 2004. Dr. He is the author and co-author of over 100 papers in premier sensor network journals and conferences with over 10,000 citations (H-Index 40). His publications have been selected as graduate-level course materials by over 50 universities in the United States and other countries. Dr. He has received a number of research awards in the area of networking. Dr. He is also the recipient of the NSF CAREER Award 2009 and McKnight Land-Grant Professorship. Dr. He served a few program chair positions in international conferences and on many program committees, and also currently serves as an editorial board member for six international journals including ACM Transactions on Sensor Networks. His research includes wireless sensor networks, cyber-physical systems, intelligent transportation systems, real-time embedded systems and distributed systems, supported by National Science Foundation, IBM, Microsoft and other agencies.