Seminar Talk

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Title: A General Purpose Testbed for Mobile Data Gathering In Wireless Sensor Networks and a Case Study

Abstract:
In recent years, mobile data gathering in wireless sensor networks has attracted much interests in the research community. However, despite extensive efforts, many of previous work in this area lies only in theory and evaluates network performance with computer simulations, which leaves a large gap from reality. In this paper, we present the design and implementation of a general purpose, flexible platform for mobile data gathering in wireless sensor networks to evaluate network performance and algorithms in a practical setting. Instead of relying on hand-crafted theoretical models, our platform integrates both mobile data collector and sensor nodes to provide realistic performance evaluations. In addition, the platform adopts a modular design in mobile data collector and sensor nodes, and equips the mobile data collector with advanced computing capability, which makes it versatile for evaluating the performance of a wide-range of applications. Finally, as a case study, we implement a wildlife monitoring system on our platform. Our experimental results demonstrate that real implementations can evaluate many practical performance factors which would have a great impact on the sensing results and are very difficult to fully capture by theoretical models and simulations. We expect that this platform can become a very powerful general tool for more accurate network simulations and facilitate performance optimization in wireless sensor networks.

Bio:
Cong Wang is an assistant professor of the Center for Cybersecurity Education & Research and Computer Science Department at Old Dominion University. His research interests include Mobile Computing, Cybersecurity, Machine Learning, Network Optimizations and Energy-efficiency. He has made publications in various academic conferences and journals, including Trans. on Mobile Computing (TMC), Trans. on Computers (TC), INFOCOM, ICDCS, IPDPS, SECON and served as reviewers for a number of premier conferences and journals including JSAC, TON, TMC, TPDS, TC, TWC, Globecom, ICC. He is the co-author of the book Wireless Rechargeable Sensor Networks and has one U.S. Patent. Cong received his Ph.D. from Electrical and Computer Engineering, SUNY

Stony Brook University, B.Eng in Information Engineering from the Chinese University of Hong Kong (08') and MSc. In Electrical Engineering from Columbia University (09').