

学术报告

报告人: Dr. Tian He(the University of Minnesota-Twin City)

题 目: Cross-Domain Cyber-Physical Systems for Smart Cities: Addressing Mobility Challenges by Urban Systems with Urban Data

时 间: 3月10日(周四)10:00

地 点: 电院群楼 2-410

邀请人: 杨博教授

Abstract:

For the first time ever, we have more people living in urban areas than rural areas. Based on this inevitable urbanization, my research aims to address sustainability challenges related to urban mobility (e.g., energy consumption and traffic congestion) by data-driven applications with a Cyber-Physical-Systems approach (CPS, also known as a broader term for Internet of Things), which is a new information paradigm integrating communication, computation and control in real time. Under the context of a smart cities initiative proposed by the White House, in this talk, I will focus on CPS related to large-scale cross-domain urban systems, e.g., taxi, bus, subway, cellphone and smart payment systems. I will first show how cross-domain data from these systems can be collaboratively utilized to capture urban mobility in real time by a new technique called multi-view bounding, which addresses overfitting issues of existing mobility models driven by single-domain data. Then I will show how the captured real-time mobility can be used to design a practical service, i.e., mobility-driven ridesharing, to provide positive feedback to urban systems themselves, e.g., reducing energy consumption and traffic congestion. Finally, I will present real-world impact of my research and some future work about CPS for smart cities.

Bio :



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 200 papers in premier network journals and conferences with over [16,000 citations](#) (H-Index 52). Dr. He is the recipient of the NSF CAREER Award, George W. Taylor Distinguished Research Award and McKnight Land-Grant Professorship and five best paper awards in networking. Dr. He served a few program chair positions in international conferences and on many program committees, and also served as an editorial board member for six international journals including ACM Transactions on Sensor Networks and IEEE Transactions on Computers. 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.