



學術報告

Tag Counting and Monitoring in Large-scale RFID Systems: Theoretical Foundation and Algorithm Design



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Biography: Jihong Yu received his B.S. and M.S. in Telecommunications engineering from Chongqing University of Post and Telecommunications. He is currently a Ph.D. candidate in Département d'Informatique University of Paris-Sud. His research interests include RFID system, Opportunistic Networks, and Wireless Body Area Networks. He has already published 12 papers, including IEEE TMC, IEEE TCOM, IEEE TVT, and IEEE/ACM IWQoS, IEEE ICC, IEEE GLOBECOM.

In this talk, I would like to begin with the background knowledge of RFID technologies. I will share our recent experiences in designing tag counting and missing tag detection algorithms in three sections: 1. Stability analysis of the frame slotted Aloha protocol, the de facto standard in tag identification, where we derive the conditions for the stability. 2. Tag population estimation in dynamic RFID systems, where we design an adaptive estimation algorithm by jointly using Kalman filter and cumulative sum control chart. 3. Missing tag event detection in multiple-group multiple-region RFID systems, where we gradually iron out an optimum detection algorithm that works in practice armed with a proposed adaptive Bloom filter. In the end, I shall also mention several topics that are worthy investigation in the future.