



## **A Distributed Polling Service-Based Medium Access Control Protocol Testbed**

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### **Abstract**

Medium access control (MAC) protocols play a vital role in wireless networking. It is well-known that the high control overhead of IEEE 802.11 MAC is the limiting factor on the throughput and delay performance of wireless networks. We developed three polling service-based MAC protocols (PSMACs) to amortize the high control overhead over multiple frame transmissions, thus achieving higher efficiency. Both analysis and simulations are conducted to validate the efficacy of the proposed protocols. In this seminar, we review the fundamentals of PSMACs and extend this work by implementing the distributed version of PSMACs, on the GNU Radio and Universal Software Radio Peripheral (USRP) platform. We discuss various design considerations and challenges of prototyping PSMACs, and carry out extensive experimental studies with the GNU Radio/USRP PSMAC testbed. Our experimental results are found to be consistent with the theoretical study, and validate the advantages of PSMACs under realistic wireless channels.

### **Bio**

Yingsong Huang received the M.S. degrees in control theory and control engineering and the B.S. degree in Automation, both from Chongqing University, Chongqing, China. Since 2007, he has been pursuing the Ph.D. degree in the Department of Electrical and Computer Engineering, Auburn University, Auburn, AL, under the supervision of Prof. Shiwen Mao. His research interests include modeling, control and optimization in computer networks, smart grid and multimedia communication.

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