

Closing the Loop Around Wireless Ad-hoc Sensor Networks:
Experiments and Truths of today and Promises for the future.

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Motivated by recent development of Wireless Sensor Networks (WSNs), the problem of using this technology within problems of estimation and control has received widespread attention within the scientific community. A list of issues arises from the use of sensor networks in control applications. Classical control theory proves to be insufficient in modeling distributed control problems where issues of communication delay, packet loss, and time synchronization between components are not negligible. In this talk we will first describe a series of experiments concerning with estimation and control within sensor networks, highlighting accomplishments and shortfalls of each implementation. We will then introduce some conceptual issues in designing estimation and control algorithms around WSNs, using state estimation as a motivating example. Finally, we will describe our plans for the design of a new testbed for future experiments.