Low Delay Routing and Scheduling over Wireless Lossy Networks

Description:

Recent advances in wireless sensor nodes have opened an opportunity to develop new wireless applications that can shape the future of our society, for example, in Internet of Things, Smart grid and remote healthcare monitoring etc. One of the key enablers is the timely delivery of the crucial data packet. The focus of this thesis is on the design, implementation and evaluation of efficient routing and scheduling algorithms for low-delay data packet transmissions over wireless lossy networks.

Wireless lossy networks face several new challenges that must be taken into account. Per-packet delivery guarantees are more accurate and relevant performance metrics than average end-to-end delay, while link burstiness and energy constraints on sensor nodes further complicate designs.

We would first implement and evaluate some existing low-delay schemes. Examples include Ref[1] where the minimum average delay path is found assuming independent packet losses, and Ref[2] where packet losses are not considered. Based on the results and insights, a new scheme would be designed and evaluated in a simulation environment and/or a wireless sensor network testbed.

Prerequisites:
courses in communication systems/wireless sensor networks, experience in C/Matlab programming.

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References: