TOPICS IN AD HOC AND SENSOR NETWORKS

Edoardo Biagioni   **Silvia Giordano**

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When wireless cellular telephones first appeared, they were a status symbol as well as useful to those for whom the price and weight were not excessive. Now, wireless cellular networks are pervasive and seamlessly integrate voice and data, and the weight and price have both been reduced substantially.

Wireless data networks have experienced a similar evolutionary history. When they first became available, it was not clear what they would be useful for. Then applications started to emerge, particularly wireless sensor networks, where each sensor node would sense and generate data, and also forward data from other sensor nodes.

These sensors were often battery-powered, which required them to be as energy-efficient as possible. One way to be energy-efficient is to shut off the radio and processor for substantial periods of time. This duty cycling can substantially improve the overall lifetime of the network, the time before the batteries run down, but makes communication more challenging. If node A wants to send data to its neighbor B, and B is asleep, A has to wait until B's next wakeup. If A's neighbor C wakes up before B, A may send its data to C even if C is less optimally positioned to forward the data.

In addition to this flexibility, there are many strategies for duty cycling. All these choices have led to a variety of research and published algorithms for data communication over duty-cycled wireless sensor networks.

The article by Han, Liu, Luo, and Vasilakos surveys this work and compares the claimed benefits of each algorithm.

One emerging and socially very interesting application area where sensor-based instruments are starting to be much used is the recording of social activity of individuals. In the article by Matic, Osmani, and Mayora, the authors point out that this sensor-based social interaction data collection can been seen as a groundbreaking tool, but the presence of those devices can alter the subjects' behavior.

Therefore, while low-quality hand annotated social interaction systems are non-invasive, sensor-based social interaction systems allow better quality of the collected data at the cost of a more invasive and privacy breaking solution.

With this trade-off in mind, this article surveys the existing solutions for automatic monitoring of social interaction and describes the challenges of this area. In line with this vision, the authors further introduce the concept of sensing social interactions by using non-visual and non-auditory mobile sources as a solution that allows the collection of high-quality data, but at the same time does not capture privacy-sensitive data, and minimally interferes with applications and daily activities.

Thus, this article highlights several issues for further research in sensor-based collecting methods, and a clear understanding of those issues will pave the way toward their wider acceptance.