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Next generation antennas for high throughput Wireless communication in weak electromagnetic environments

Amit Mehta

Swansea University, UK

With the surge in data hungry wireless applications, we all are looking at innovative ways to increase spectrum efficiency, especially in weak electromagnetic zones. The talk will present background and current state of the art on adaptive antennas. Using industry funded pioneering work at Swansea University; it will provide examples on how adaptive antennas can provide 100 time throughput enhancements in weak signal zones. The talk will also provide network architecture for next generation vehicle wireless communications for connected cars using adaptive antennas.

a.mehta@swansea.ac.uk

Trust and reputation systems for handling insider attacks in Wireless sensor networks

Nabila Labraoui

University of Tlemcen, Algeria

Wireless sensor networks (WSNs) provide a technological basis for many different security critical applications such as critical infrastructure monitoring, healthcare and battlefield. However, WSNs are often deployed in unattended, harsh and hostile environment that makes them susceptible to many security threats and are specifically prone to physical node capture in which the adversary can easily launch the so-called insider attacks such as node compromise, bypassing the traditional security mechanisms based on cryptography primitives. So, the compromised nodes can be modified to misbehave and disrupt the entire network and can successfully perform the authentication process with their neighbors, which have no way to distinguish fraudulent nodes from trustworthy ones. Trust and reputation systems have been recently suggested as a powerful tool and an attractive complement to cryptography-based schemes in securing WSNs. They provide ability to detect and isolate both faulty and malicious nodes. Considerable research has been done on modeling and managing trust and reputation. In this talk, we present trust topic issue that remains an open and challenging field.

labraouinabila@yahoo.fr