**Motivation – To Design a Dependable Protocol**

- Quality of Service (QoS) provision in Wireless Sensor Networks (WSNs) is extremely challenging because of:
  - resource constraints of sensor nodes
  - harsh interference in practical applications
  - unknown network topology
  - various traffic pattern, e.g., heavy or light, periodic or burst
- Stringent QoS metrics are required for mission-critical applications, e.g., in wireless industry, smart grids, cooperative driving, etc.
  - high reliability
- low latency
- high energy efficiency
- high robustness against interference

- Our goal is to design a dependable protocol which is able to work under harsh interference and performs as reliably as possible under various scenarios (i.e., different traffic, different payload length).

**Solution – DeCoT+**

DeCoT+ is based on DeCoT [4], a dependable concurrent transmission-based protocol for WSNs. It has several mechanisms to achieve dependable communication.

- Design of DeCoT+
  - Multi-channel hopping: Scan-and-Lock mechanism
  - maintain usable links under interference
  - Force-Initiated mechanism
  - aOF/O/Coin
  - decentralize the network
  - Nego-and-Action mechanism
  - a framework designed for dependable WSNs
  - Freezing mechanism
  - node restores the forwarded packet and initiates with this packet in the next additional slot

- Implementation
  - Operating system: Contiki [1]
  - Simulation: Cojua simulator
  - Sensor nodes: TelosB
  - Testbed: FlockLab [2]

**Experimental Evaluation**

- Evaluation
  - Testbed: D-Cube [6]
  - Exp. duration: 480 s
  - Performance metrics
    - reliability
    - latency
    - energy consumption
  - M: message length (B)

**Legend**

- Synchronization period: initiated by the host
- Radio off
- Additional slot

**References**


