Geographic routing in realistic radio propagation conditions

Author(s) - Institution(s):
Robert Fabian, AGH
Pawel Kulakowski, AGH

Corresponding author email: kulakowski@kt.agh.edu.pl

Corresponding WG group: WG3

Abstract:

Classical routing algorithms do not perform well in large-scale wireless sensor networks, as they require maintaining huge routing tables and exchanging frequent packets with network topology state. Beaconless geo-routing algorithms solve this problem, routing data packets on the basis of positioning data. In this paper, the performance of geo-routing is validated in radio conditions that are realistic for sensor networks, i.e. when sensor positions are known with some inaccuracy and when wireless fadings affect the radio channels. It is shown that the geo-routing protocols that are known to guarantee the packet delivery for unit disk graph model and perfect location knowledge are far from that in real sensor networks. Further, a new modification of the well-known Angular Relaying algorithm is proposed. The new algorithm is validated by computer simulations and it is proved that with the proposed enhancement its delivery rate is larger than for the original algorithm.