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Exercises of lecture

Wireless Sensor Networks

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Sheet 1

Note: There is no complete solution provided for this exercise. Most areas are still actively being researched. Instead, a number of relevant research papers are listed here for references. Some interesting areas include:

1. Routing layer: In MANET, each node is a router. The main problem in MANET is to construct and maintain a multi-hop route between the source and the destination in a dynamic environment. For example, if all the intermediate nodes of an initiated route are moving, the route stability will be affected by the node mobility.

2. Transport layer: TCP assumes the packet losses as an indication of network congestion. However, the link failures due to mobility are the primary reason for most of the packet losses. Some approaches of TCP variation are introduced to alleviate the performance degradation, e.g. by using the cross layer notifications to report route failure.

References:

1. T. Camp, J. Boleng, and V. Davies. A survey of mobility models for ad hoc network research. Wireless Communications F4 Mobile Computing (WCMC): Special issue on Mobile Ad Hoc Networking: Research, Trends and Applications, 2(5):483 502, 2002.

2. Ahmad Al Hanbali, Eitan Altman, Philippe Nain. A survey of TCP over ad hoc networks. IEEE Communications Surveys & Tutorials 2005, pp. 22-36.

3. S. Kumar, V. S. Raghavan and J. Deng, Medium Access Control Protocols for Ad-Hoc Wireless Networks: A Survey, Elsevier Ad-Hoc Networks Journal, Vol. 4(3), pp. 326-358, May 2006.

4. IETF MANET Working Group Mailing List,
URL: https://www1.ietf.org/mailman/listinfo/manet