Technische Universität München
Lehrstuhl für Netzarchitekturen und Netzdienste
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Thesis
(B.Sc. / M.Sc.)

Better Approach To Mobile Adhoc Networking (B.A.T.M.A.N.)

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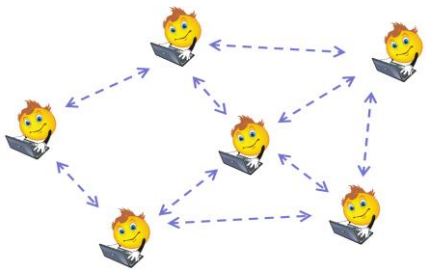
Motivation

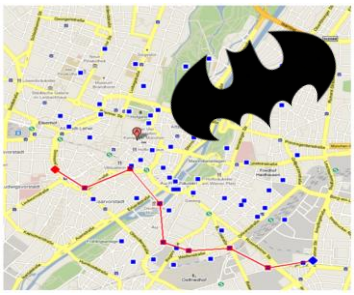
Wireless devices suffer from fast changing link conditions due to interference and mobility or other communication issues. These issues affect the communication such that a mobile device may not be able to directly communicate directly with a base station. Routing protocols for wireless networks address these problems by building a multi-hop topology in order to guarantee connectivity between a mobile device and a base station. Moreover, routing protocols have to deal with asymmetric links. A link is assumed to be asymmetric if there is significant difference in terms of packet loss depending on the direction (A→B, B→A). Recent measurements from test beds have shown that approximately 15% of wireless links have asymmetric channel characteristics. Thus, asymmetric links have to be concerned by the protocols to establish a stable and reliable topology. However, just a small number of protocols provide mechanisms to detect and integrate asymmetric links. The focus of this thesis lies on the simulation and evaluation of the BATMAN protocol.
In addition, an evaluation of mechanisms for asymmetric link support will be part of the thesis. The simulation will be implemented with the OPNET Modeler network simulator.

Your Task

Your task consists of the following steps.

1) Get familiar with the OPNET modeler and the context of routing in wireless sensor networks
2) Implement the BATMAN protocol
3) Develop meaningful simulation scenarios and compare the performance of the protocol with other state-of-the-art routing protocols
4) Evaluation of mechanism for asymmetric links
5) Evaluation of the simulation results





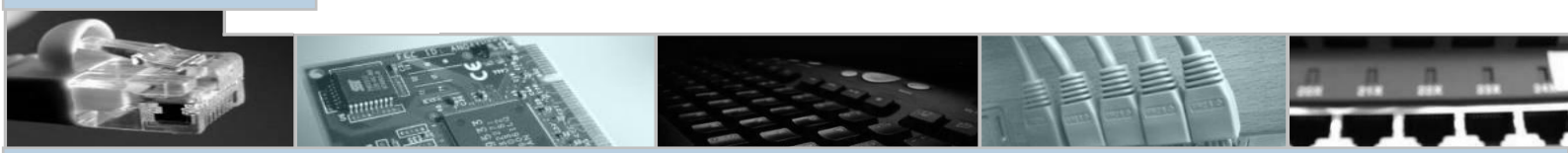
Depending on the project's scope, this part will be more (MSc) or less in depth (BA)

Requirements

Previous knowledge of communication issues and Discrete Event Simulation (DES) is useful but not required since you will be provided with the corresponding information and tutorials. The simulation will be written in C. Thus, some knowledge of the C programming language will give you a clear advantage.

Keywords

BATMAN, Routing, Simulation, Wireless, Ad hoc, Network, Asymmetric, Links



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