A Comparison of Wireless Network Protocols from a Simulation Perspective

by

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Approved by:

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1 Introduction

Why is wireless computing "a good thing?" Illustrate by giving examples of applications for things wireless...

Different protocols for different purposes. Explain what each protocol is meant for; give numbers on data rates, the kind of application domain for each, etc.

- Wi-Fi
- Bluetooth
- ZigBee

Explains basic notions of network software design - that is, the layered model. Each of the protocols you discussed above has particular PHY and a MAC layers.

Wi-Fi is motivated by internetworking computers together (ad hoc) and/or connecting the network to a larger infrastructure (access points.) Bluetooth is motivated by allowing components of the computer system to connect to one another without the need of wires. ZigBee is motivated by wireless sensing apps. The application domains are very different and that motivates the creation of specific protocols.

Your work will compare the protocols from the perspective of one who is interested in using them in the context of *simulations.* You will investigate how their features compare and how they can affect the development of computer models for simulation.

2 Background

We want to build simulations of wireless things so that we can experiment with them. Simulation allows for an environment that is fully *controllable,* where conditions can be carefully crafted to exercise different features and functions of wireless protocols. This allows simulation experiments to be *repeatable.* Simulation allows for experiments to be conducted at low cost since they don't require hardware for each wireless network node. We can build models of prototypes in software, experiment with them, and analyze their behavior and performance.

We have a simulator, but we only have a model for 802.11b. More more models would be useful so that we can use the simulator for a wider range of studies in security, scalability, etc.

3 Project Description

4 Significance and Conclusion

State what will be the contribution of your work in terms of deliverables. I envision that it will lead to additional models to SWAN (Bluetooth and ZigBee.)

This fits Prof. Perrone's research agenda as evidenced by his publications...