



| | |
|---|--|
| ThesisTitle | Development of Routing Algorithm Based On Bluetooth Technology |
| Research Field | Computer Networks |
| Supervisor Name(s) | Assist. Prof. Dr. Imad H. Al-Hussaini |
| Student Name | Ibrahim Abdul Mutalib Ibrahim Alsheikh Ahmed |
| Abstract | |
| <p>The increasing popularity of handheld and mobile computing devices has created a need for wireless network access. Bluetooth is a promising technology for wireless communication occupying the 2.4 GHz radio frequency band. The potential for Bluetooth to be involved in wireless sensor networks and mobile wireless networks is immense, due to the low cost, royalty-free license, and low energy consumption. Multiple Bluetooth devices can join together to form a star network called "piconet". Networks between piconets are termed "scatternet", which provide a true multi-hop scenario suitable for Mobile Ad-hoc Networks.</p> <p>Many scatternet formation algorithms were introduced, but they all have never been implemented and were only simulated because current commercial Bluetooth devices do not completely support the Bluetooth standard specifications.</p> <p>In this thesis, an on demand peer-to-peer routing algorithm protocol was developed, to be implemented practically on real world devices because the industrial limitations were taken into account. This node-intelligent algorithm consists of three components: path discovery, data transfer, and path monitoring. Based on each node's routing table information, a path to destination can be discovered, and data is routed via a series of connections/disconnections.</p> <p>The protocol software was developed using Java 2 Micro Edition programming language. The implementation and testing of the protocol were conducted on networks of sizes 2, 3, and 5 nodes using real mobile phones. The performance analysis showed that total data transfer delay will not exceed 10 seconds when data size ≤ 4 KB and routers number is ≤ 2. The developed algorithm is useful for many non-real time applications, such as chatting and file transfer.</p> | |
| Student email | |