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Performance Analysis of Bluetooth Low Energy Mesh Routing Algorithm in Case of Disaster Prediction

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Abstract : Ubiquity of natural disasters during last few decades have risen serious questions towards the prediction of such events and human safety. Every disaster regardless its proportion has a precursor which is manifested as a disruption of some environmental parameter such as temperature, humidity, pressure, vibrations and etc. In order to anticipate and monitor those changes, in this paper we propose an overall system for disaster prediction and monitoring, based on wireless sensor network (WSN). Furthermore, we introduce a modified and simplified WSN routing protocol built on the top of the trickle routing algorithm. Routing algorithm was deployed using the bluetooth low energy protocol in order to achieve low power consumption. Performance of the WSN network was analyzed using a real life system implementation. Estimates of the WSN parameters such as battery life time, network size and packet delay are determined. Based on the performance of the WSN network, proposed system can be utilized for disaster monitoring and prediction due to its low power profile and mesh routing feature.

Keywords : bluetooth low energy, disaster prediction, mesh routing protocols, wireless sensor networks
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