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Estimations from Hop Counts Depends On Network Density and Mobility Patterns Networks

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Description

Numerous new wireless and mobile applications have been made possible in our daily lives and in a variety of settings by the ubiquity of wireless networking and Internet technologies, which was aided by the development of embedded networking devices with smart information processing and computing capabilities. Numerous embedded devices, ranging from tiny sensor nodes to smartphones and other palm-sized gadgets, offered up significant opportunities for mobile applications. Decentralized and management and operation of these systems became necessary as the number of users grew. In parallel with these architectural requirements, new models and mechanisms are being proposed in all communication layers and security services.

With a focus on wireless ad hoc networking, wireless cross-layer design, security, privacy, and trust, we hoped to showcase cutting-edge research contributions on new frontiers and applications in mobility enabled distributed and embedded systems. Six pieces covering diverse facets of these themes make up this special edition. The approved articles underwent two or more rounds of review, and each manuscript has had at least two reviews. In cognitive radio sensor networks, "Performance Analysis of CSMA based Opportunistic Medium Access Protocol" In a cognitive radio sensor network, Shah and Akan discuss the performance analysis of secondary users. The authors take into account a wideband data traffic channel that secondary users negotiate using a CSMA-based media access control protocol with a common control channel. Two fundamental performance metrics, bandwidth and delay are formulated based on the fact that secondary users can exploit the cognitive radio to simultaneously access distinct traffic channels in the common interference region. The analysis reveals that dedicating a common control channel for secondary users enhances their aggregated bandwidth approximately by a factor of five while reducing the packet delay significantly. For collision correction of the safety messages in specialised short range communications in a vehicle context, a new cross-layer architecture is created. A novel decision-making block that employs data from the medium access control layer for the channel estimator and equaliser is used for collision correction at the physical layer. The specialised short range safety messages' reception reliability is greatly increased and the packet error rate is decreased using this technique, especially under conditions of high user load. The authors suggest changing the cluster-tree structure into a cluster-Direct Acyclic Graph (DAG) and integrating a greedy algorithm with thIEEE 802.15.4 standard in order to increase reliability and optimise topologies at the MAC layer. In addition to delay and packet loss evaluation measures, the presented research takes into account the global energy savings by lowering MAC layer signalling for a few well-known routing protocols. Authors prove that their protocol is immune against various classes of attacks (including some internal attacks).

Authors also provide a bulk of experimental results and show that their protocol is almost one order of magnitude faster than the previous best protocol for providing anonymous feedback in decentralized systems for the same security level. the issue of placing sensor nodes in mission-critical networks to increase coverage while requiring radio access to transmit the sensed data remotely is defined by the authors. Then, a distributed protocol is suggested to maximise coverage by taking use of the deployed nodes' mobility. His research interests include computer and network security with emphasis on mobile and wireless system security, public key infrastructures (PKI), privacy, and application layer security protocols. Two different error types are identified caused by either the distribution of the devices or mobility. Our goal is to quantify the error of such hop count based distance estimation in a dynamic network and to identify the main influencing factors by comparing various mobility patterns. Our observations and analysis indicate that mobility positively influences the error rate, counteracting the error induced by low density. Nevertheless, a high mobility can also increase the error, turning a natural overestimation into an underestimation of the respective distances. The speed, direction, and similarity of moves within a neighbourhood are some of the applied mobility parameters that we find to have varying effects on the height of the overestimation brought on by mobility.

Additionally, we calculate, contrast, and describe each one's influence on based on the hop counts and two potential indicators a decentralised manner and are able to provide details about the characteristics of the mobility a machine We enumerate several aspects of the utilised mobility, such as movement patterns in a neighbourhood, which vary depending on factors including speed, direction, and resemblance the overestimation brought on by mobility. Additionally, we calculate, contrast, and describe each one's influence on based on the hop counts and two potential indicators. We suggest Angle Mobility, in which nodes move around the anchor node at a predetermined angle and pace. We suggest this mobility model in order to consider the consequences of neighbours' movements in isolation, including movement direction, speed, and similarity. the ability to move at an angle model, each of these three setting options for the attribute Controlled independently while maintaining the same value for the others. According to the prior classification, Individual and linked angles are distinguished [1-5].

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Conflict of Interest

The Author declares there is no conflict of interest associated with this manuscript.

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