



An Enhanced Scheme in Controlling Both Coverage and Quality of Service in Wireless Sensor Networks

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Abstract- With the increasing number of applications for Wireless Sensor Networks (WSNs), different Quality of Services (QoS) levels based on the type of applications are required. An increasing research interest has been noted in the provision of QoS support in WSNs. QoS support in WSNs is challenging because of very limited resources, such as battery power, processing power, memory, and bandwidth. An earlier study introduced a QoS control approach based on the Gur Game. The Gur Game-based scheme can maintain QoS without knowing the total number of sensors. However, the Gur Game-based scheme does not consider the active sensor coverage. The problems of collecting redundant data and wasting bandwidth and battery energy arise if active sensors are distributed too densely or too sparsely. Therefore, this study proposes a Coverage-Aware QoS Control (CAQC) to achieve both QoS and coverage control using an enhanced reward function. Simulations that compared our scheme with previous studies in various environments indicated that CAQC creates a robust sensor network capable of achieving both QoS and coverage targets.

Index terms: Wireless Sensor Network, Gur Game, QoS Control, Coverage