Energy Aware Classification for Wireless Sensor Networks Routing

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***Abstract*— Wireless sensor network (WSN) is an application of wireless ad-hoc networks that is taking an increasing role in everyday lives. Because the energy efficiency of routing protocols is one of the major challenges facing WSN this paper aims to provide a survey on WSN that focuses on their ability to save power and contributes to prolonging the lifetime of WSN. The survey displays the traditional classification of WSN routing techniques running in the network layer, which classifies it into 3 categories: flat, hierarchal and location based. It is then further classified according to the protocol operation. This paper adds a new branch to the traditional classification that includes the Data reporting method, which was previously just a constraint for WSN routing, but now shall be considered a category since if highly influences the routing protocol in term of energy consumption. As the more frequent the data reporting occur the more transmissions take place consuming more of the battery capacity. To better categorize WSN routing protocols with respect to energy saving this paper introduces a new classification that is primarily focused on the energy awareness of different protocols. The paper shows that WSN save power by using traffic engineering based approaches, topology control based approaches or reserved based approaches and that all energy saving approaches can be classified under these three main categories. Using these three categories or combinations of them is a key to investigating routing design issue that needs to be enhanced in order to improve the life span of a wireless network. The paper applies the new introduced classification to a number of key routing protocols to show that it provides a distinction in their approaches towards saving power and that it is capable of highlighting the key features related to energy saving in each of these routing.**

***Keyword*— WSN, Routing Protocols, Energy Aware.**

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