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Abstract
Wireless Sensor Networks (WSNs) are gradually becoming a major field of research due to the increasing interest in their applications and portability. For WSNs, it has always been a great challenge to use the battery power efficiently. Along with many other factors, protocols can directly influence the lifetime for WSNs.

This study presents a new method to build up the path of a WSN according to the Shortest Path Algorithm for a Distributed Enviroment (SPD). The advantages of routing and direct communication are combined. When a node's power is low, the remaning power is used to switch to the most efficient of the two protocols, so we are able to develop a new mixed protocol to prolong the lifetime of a WSN.

In addition, this study also presents sensor nodes which we designed with low power consumption and low cost. By integrating our sensor node design and our mixed protocol, our design results in a miniature WSN with increased function and a monitor that eases human interaction. Finally, considering the research about remotely monitored systems, the new method presented in this study combined with the function of a miniature system and a backbone network, not only can receive the digital information and image through the base of a WSN, but also can spy on the nodes in different situations through the Internet server, to build up a real distributed remote monitoring system.
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