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A PROJECT REPORT ON

**Maximizing the Lifetime of Wireless Sensor
Network using Virtual Backbone Scheduling**

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ABSTRACT

Wireless Sensor Networks (WSNs) are key for various applications that involve long-term and low-cost monitoring and actuating. In these applications, sensor nodes use batteries as the sole energy source. Therefore, energy efficiency becomes critical. We observe that many WSN applications require redundant sensor nodes to achieve fault tolerance and Quality of Service (QoS) of the sensing. However, the same redundancy may not be necessary for multi-hop communication because of the light traffic load and the stable wireless links. In this paper, we present a novel sleep-scheduling technique called Virtual Backbone Scheduling (VBS). VBS is designed for WSNs has redundant sensor nodes. VBS forms multiple overlapped backbones which work alternatively to prolong the network lifetime. In VBS, traffic is only forwarded by backbone sensor nodes, and the rest of the sensor nodes turn off their radios to save energy. The rotation of multiple backbones makes sure that the energy consumption of all sensor nodes is balanced, which fully utilizes the energy and achieves a longer network lifetime compared to the existing techniques.