Energy efficient shift-based sleep scheduling mechanism for WSN deployment in rescuebots

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Abstract

A trend in today's technology is the deployment of wireless sensor network in mobile robotics for emergency surveillance and rescue systems. The field of robotics can be enhanced when deployed with sensors. In this a critical issue is how to increase the lifetime of the network. A sleeping mechanism for putting the idle sensors to sleep is necessary. First we design a 3-tier hybrid network architecture to support the deployment of WSNs in mobile robots. Then we propose a shift-based sleep scheduling mechanism in which the sensors are in sleep for half-a-time and wakeup in the other half. Our research creates virtual circles in the sensing environment and the sensors are put to sleep based on shifts. The experimental results show that our scheme performs well compared to other existing sleep scheduling algorithms.