



INTELLIGENT ENVIRONMENTAL SENSING WITH AN UNMANNED AERIAL SYSTEM IN A WIRELESS SENSOR NETWORK

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Abstract - This paper proposes a novel environmental monitoring mechanism to integrate recently-established development of an Unmanned Aerial System (UAS) with WSNs for remote monitoring. The high mobility of UASs can solve the limitations associated with using WSNs in hazardous areas. In this paper, the WSN node, the Wireless Environmental Monitoring Station (WEMS), is based on ZigBee protocol for long-duration monitoring. Furthermore, to ensure the integrity of collected environmental data, an algorithm is designed in WEMS for verification. Finally, a detailed analysis of packet transmission efficiency based on ranges of flight distance is proposed to examine the effect of environmental monitoring.

Index terms: Wireless Sensor Networks, Unmanned Aerial System, ZigBee, Remote monitoring, Remote Sensing, Data collection