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# Distributed patching for mobile wireless sensor networks

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## Abstract:

Mobile wireless sensor networks (MWSNs), the continuous movement of sensor nodes, may cause complete disconnection of the network or at best a part of it. The design of such networks should guarantee that all sensor nodes at all times have a path to the sink node(s). Prolonging the lifetimes of the MWSN is a crucial design issue but should not be at the expense of other essential functions such as connectivity. In this paper, we propose an energy efficient distributed framework for connectivity maintenance of MWSNs. In the proposed framework, sensor nodes of the MWSN schedule and control their radio frequency (RF) modules based on a dynamic coordinated reconstruction mechanism, some sensor nodes may lose their connectivity with the network due to mobility, depletion of energy and/or incurred faults. Two protocols are developed to patch up the disconnection of the MWSNs. The first protocol reestablishes the network connection consuming far less energy than state-of-the-art alternatives. However, it is capable of reestablishing the connection when no more than 20% of the MWSN backbone nodes lose connection concurrently. The second protocol extends this limit to operate when up to 35% of the MWSN backbone nodes lose connections simultaneously.

## Keywords:

Mobile wireless sensor networks Patching up network backbone Energy efficient Connectivity Minimum connected dominating set

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( 2 )

## VARIANTS OF HB PROTOCOLS FOR RFID SECURITY

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### Abstract:

Radio Frequency Identification (RFID) has received recently a great attention from large organizations and researchers due to the dropping tag costs and vigorous RFID standardization. They are becoming more common in daily use to identify, locate and track people, assets, and animals. Number of protocols has been proposed in the literature for the security of RFID against passive attacks. One of the well-known protocols is the HB family protocol which utilizes the complexity of decoding linear codes for RFID security against passive attacks. The nonlinear HB (NLHB) is one member of the HB family protocol which achieves high security by reducing the provably hard problem of decoding a class of nonlinear codes to passive attacks. This paper introduces Multi-Nonlinear Stages to the HB protocol to enhance its security against passive attacks. More specifically, the paper presents two Multi-Nonlinear versions of the HB protocol; Double-Nonlinear HB (DNLHB), and Triple-Nonlinear HB (TNLHB). The proposed protocols increase significantly the security of RFID systems against passive attacks at a lower implementation cost.

### Keywords:

HB family protocols, NLHB protocol, LPN problem, secure and efficient authentication protocol, passive attacks, RFID tags.

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( 3 )

# COLD: A ROS package for continuous Learning from Demonstration teaching a robot to write

M Hussein, Y Mohammad, S A Ali

## Abstract:

NULL

## Keywords:

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