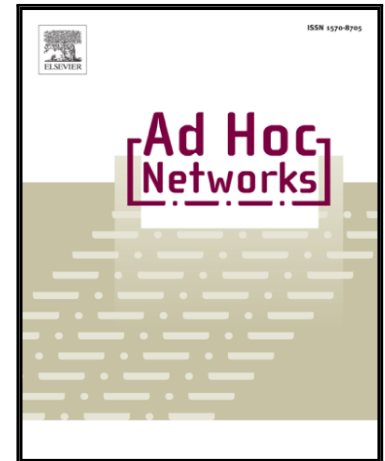


Accepted Manuscript

Heterogeneous Fault Diagnosis for Wireless Sensor Networks

Rakesh Ranjan Swain, Pabitra Mohan Khilar, Sourav Kumar Bhoi

PII: S1570-8705(17)30184-1
DOI: [10.1016/j.adhoc.2017.10.012](https://doi.org/10.1016/j.adhoc.2017.10.012)
Reference: ADHOC 1599



To appear in: *Ad Hoc Networks*

Received date: 29 April 2017
Revised date: 25 August 2017
Accepted date: 21 October 2017

Please cite this article as: Rakesh Ranjan Swain, Pabitra Mohan Khilar, Sourav Kumar Bhoi, Heterogeneous Fault Diagnosis for Wireless Sensor Networks, *Ad Hoc Networks* (2017), doi: [10.1016/j.adhoc.2017.10.012](https://doi.org/10.1016/j.adhoc.2017.10.012)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Heterogeneous Fault Diagnosis for Wireless Sensor Networks

Rakesh Ranjan Swain*, Pabitra Mohan Khilar, Sourav Kumar Bhoi

*Department of Computer Science and Engineering
National Institute of Technology Rourkela
Odisha 769008, INDIA*

Abstract

Fault diagnosis has been considered as a very challenging problem in wireless sensor network (WSN) research. Faulty nodes having different behavior such as hard, soft, intermittent, and transient fault are called as heterogeneous faults in wireless sensor networks. This paper presents a heterogeneous fault diagnosis protocol for wireless sensor networks. The proposed protocol consists of three phases, such as clustering phase, fault detection phase, and fault classification phase to diagnose the heterogeneous faulty nodes in the wireless sensor networks. The protocol strategy is based on time out mechanism to detect the hard faulty nodes, and analysis of variance method (ANOVA test) to detect the soft, intermittent, and transient faulty nodes in the network. The feed forward probabilistic neural network (PNN) technique is used to classify the different types of faulty nodes in the network. The performance of the proposed heterogeneous fault diagnosis protocol is evaluated using network simulator NS-2.35. The evaluation of the proposed model is also carried out by the testbed experiment in an indoor laboratory environment and outdoor environment.

Keywords: Wireless Sensor Networks, Heterogeneous Fault, Fault Diagnosis, Probabilistic Neural Network, ANOVA

*Corresponding author

Email address: rakeshswain89@gmail.com, pmkhilar@nitrkl.ac.in, souravbhoi@gmail.com (Rakesh Ranjan Swain*, Pabitra Mohan Khilar, Sourav Kumar Bhoi)

Download English Version:

<https://daneshyari.com/en/article/6878659>

Download Persian Version:

<https://daneshyari.com/article/6878659>

[Daneshyari.com](https://daneshyari.com)