

Article

## Application of Neurocomputing for Data Approximation and Classification in Wireless Sensor Networks

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**Abstract:** A new application of neurocomputing for data approximation and classification is introduced to process data in a wireless sensor network. For this purpose, a simplified dynamic sliding backpropagation algorithm is implemented on a wireless sensor network for transportation applications. It is able to approximate temperature and humidity in sensor nodes. In addition, two architectures of “radial basis function” (RBF) classifiers are introduced with probabilistic features for data classification in sensor nodes. The applied approximation and classification algorithms could be used in similar applications for data processing in embedded systems.

**Keywords:** Radial basis function; back propagation; wireless sensor network; distributed Data approximation and classification.

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### 1. Introduction

There are different means of transporting products between cities and countries worldwide. According to the type and importance of the transported products, certain requirements are considered in the selection and supervision of transportation systems [1]. The use of wireless sensor networks to record environmental conditions such as temperature and humidity during the transport of sensitive goods and products has increased considerably [2,3]. After measuring environmental conditions, data are sent for processing and decision-making; in advanced transportation systems, key decisions are made in measurement systems in a distributed manner [4]. The use of distributed data processing

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