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Appraisal of Soft Computing Methods in Collaboration With Smart City Applications and Wireless Network

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ABSTRACT

Applications of soft computing methods are spread in fields that deal with intelligent analysis. As the human intelligence can survey the likelihood of some occasions in possibilities, comparatively soft computing systems additionally utilize some smart-based strategies to evaluate ongoing issues with diagnostic models. Fundamental segments of soft computing incorporate machine learning, probabilistic thinking, swarm intelligence, and ANN algorithms. In this research article, there is a broad analysis of these intelligence-based soft computing strategies connected as different operational parts of a wireless network and there is a scheme of a soft computing-based method for smart and safe health care systems.

KEYWORDS

Communication, Smart City, Smart Health Care, Soft Computing, Wireless Network

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1. INTRODUCTION

Wireless Sensor Network (WSN) is a congregation of self-organized kinds of sensors which are grouped together to screen and record physical or natural conditions (i.e. used to estimate temperature, sound, weight etc.) and passes accumulated data to the nodes present in the central region. WSN put together and connect between correct and virtual condition, which makes it more utilizable for some real time applications. Mainly WSN is most suitable (Akila et al., 2016) for military applications but now a days it is used in various other sectors like industrial applications, consumer applications, health care applications and many more. Despite of having many advantages there are some challenging issues that also takes place in WSNs like access within radio range problem, energy hole problem, routing issues, coverage problem, load balancing problem and so on (Tomic et al., 2017). These issues effect on different factors of WSN such as energy consumption, stability, quality, deployment time, lifetime of network, which degrade the performance of the WSN. To solve the issues, various researchers develop different mechanisms. Considering all the above critical reasons, this chapter describes a detailed analysis on important applications of soft computing which is an emerging computational strategy in current scenario, on various improved and challenging solutions in WSN. In this article, different kind of soft computing paradigms are discussed and various types of soft computing practices which have been developed such as swarm intelligence, fuzzy logic, neural network, reinforcement learning and evolutionary algorithm are also focused (Kumar et al., 2018) with their implementation details with respect to various suitable applications in wireless sensor network.

In recent technological development. Soft computing approach plays an important role to solve multiple purpose where the problem is based on approximation and probability. If we investigate various computation problems and strategies to solve many such issues, gradually the hard computing paradigms were time to time and bit by bit supplanted by the soft computing methods, such as artificial neural networks (ANN) (Ahad et al., 2016), Genetic Algorithm (GA) (Sharma et al., 2017), fuzzy logic system (Muduli et al., 2018) and particle swarm intelligence. Data mining and data modelling practices are most of the times used for refining data when data aggregation method does not follow proper data models and there are many operational errors. The precision of the information can be expanded by utilizing the data combination and the accumulation operations. Accompanied by numerous repetitions of similar information or when an information is produced from different sources, precision must be expanded (Eldhose et al., 2016). Parameters, for example, way length, vitality utilization are required for outlining multi-way directing calculation. A combinational streamlining issue is taken for the enhancement of the network parameters for WSNs directing procedure. This issue can be illuminated by utilizing the subterranean Ant Colony Optimization (Goudarzi et al., 2014).