

Handbook of Research on Recent Developments in Intelligent Communication Application

Part of the Advances in Wireless Technologies and Telecommunication Book Series

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Description:

The communication field is evolving rapidly in order to keep up with society's demands. As such, it becomes imperative to research and report recent advancements in computational intelligence as it applies to communication networks.

The **Handbook of Research on Recent Developments in Intelligent Communication Application** is a pivotal reference source for the latest developments on emerging data communication applications. Features extensive coverage across a range of relevant perspectives and topics, such as satellite communication, cognitive radio networks, and wireless sensor networks.

Readers:

This book is ideally designed for engineers, professionals, practitioners, upper-level students, and academics seeking current information on emerging communication networking trends.

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Topics Covered:

- Cluster Based Web Servers
- Cognitive Radio Networks
- Communication Networks
- Data Communication Applications
- Flying Ad-hoc Networks
- Industrial Wireless Sensor Network
- Micro-Electromechanical Systems
- Satellite Communication

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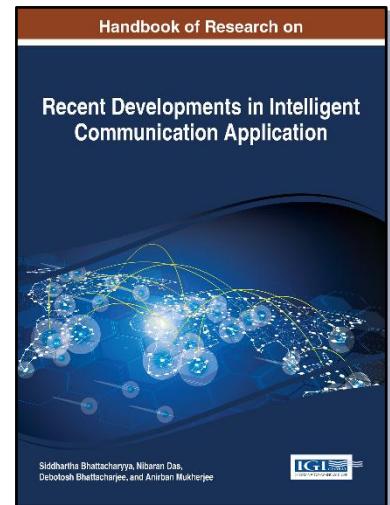


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Chapter 16

Modified Differential Evolution Algorithm Based Neural Network for Nonlinear Discrete Time System

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ABSTRACT

Two main important features of neural networks are weights and bias connection, which is still a challenging problem for researchers. In this paper we select weights and bias connection of neural network (KN) using modified differential evolution algorithm (MDEA) i.e. MDEA-NN for uncertain nonlinear systems with unknown disturbances and compare it with KN using differential evolution algorithm (DEA) i.e. DEA-KN. In this work, MDEA is based on exploitation and exploration of capability, we have implemented differential evolution algorithm and modified differential evolution algorithm, which are based on the consideration of the three main operator's mutation, crossover and selection. MDEA-KN is applied on two different uncertain nonlinear systems, and one benchmark problem known as brushless dc (BDC) motor. Proposed method is validated through statistical testing's methods which demonstrate that the difference between target and output of proposed method are acceptable.

INTRODUCTION

A neural network is a processing device, whose design and functioning was inspired by the human brain. In computing world neural networks has a lot of gain, also known as artificial neural network. Before discussing neural network let us focus on functioning of human brain. Human brain consisting of spe-

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