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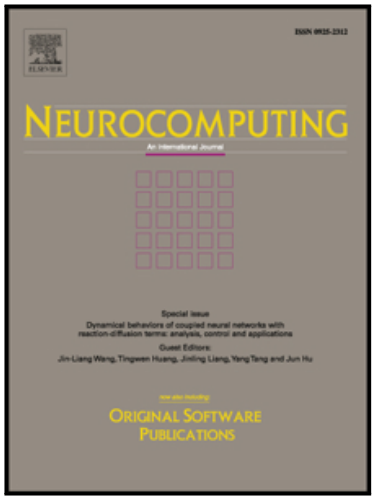

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Hierarchical Temporal Memory Method for Time-series-based Anomaly Detection

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Abstract

The time-series-based anomaly detection is a well-studied subject, and it is well-documented in the literature. Theories and techniques have been proposed and applied successfully for domain-specific applications. However, this subject has received renewed interest motivated by the increasing importance of continuously learning, tolerance to noise and generalization. This paper tackles these problems by applying Hierarchical Temporal Memory (HTM), a novel biological neural network. HTM is more suitable for dealing with the changing pattern of data since it is capable of incorporating contextual information from the past to make more accurate prediction. Both artificial and real datasets are tested with HTM for the time-series-based anomaly detection. The experiment results show that HTM can efficiently detect the anomalies in time series data.

Keywords: Anomaly detection, Biological neural network, Hierarchical temporal memory

1. Introduction

Anomaly indicates something that deviates from the standard or normal state it is expected for. The anomalies are often referred to as outliers, discordant observations, exceptions, aberrations, surprises, etc [1, 2]. Anomaly

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