Taylor & Francis
Online

Computers and computing

Big Data Classification Using Enhanced Dynamic KPCA and Convolutional Multi-Layer Bi-LSTM Network

Gnanendra Kotikam ✉ & S. Lokesh ⓘD
Pages 8686-8704 | Published online: 12 Feb 2023

" **Cite this article**   ⬀ https://doi.org/10.1080/03772063.2023.2173667   [Check for updates]

📄 **Full Article**   🖼 **Figures & data**   📑 **References**   " **Citations**   📊 **Metrics**   🖨 **Reprints & Permissions**

Read this article

ABSTRACT

Over the last few years, Big Data has sparked a lot of interest in a variety of engineering and scientific fields. Despite its numerous advantages, big data presents several issues such as big data management, big data analytics, big data security, and privacy which must be addressed to improve service quality. The proposed method focuses on data preprocessing, feature extraction, and classification. At first, data preprocessing has been performed and the weights have been assigned by the automated weight assignment model. In addition, the feature extraction model applies Principal Component Analysis (PCA) which employs feature correlation at the initial level, with best Information Gain (IG) and time-series data's similarity search with Kernel Dynamic Time Wrapping (DTW) method. On this basis, an Enhanced dynamic KPCA algorithm is introduced by integrating the kernel trick, DTW algorithm, PCA, and information gain. Then Convolutional multi-layer Bi-LSTM algorithms have been applied for classification. To analyze the big data performance, 8 types of datasets such as 32-pendigits, Bank-Marketing, Click Prediction, EEG, Electricity-normalized, Jm1, Magic telescope, and Amazon employee access are used. The performances are evaluated by different metrics with existing methods of LSTM, BRNN, MFC, and DL methods.

🔍 **KEYWORDS:** Big data   Convolutional multi-layer bi-LSTM   Information gain   Kernel dynamic time wrapping   Multilayer self-attention

‹ **Previous** article   **View** issue table of contents   **Next** article ›

DISCLOSURE STATEMENT

No potential conflict of interest was reported by the author(s).