Accepted Manuscript

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PII: S0167-739X(17)32980-1
DOI: https://doi.org/10.1016/j.future.2018.06.052
Reference: FUTURE 4314

To appear in: *Future Generation Computer Systems*

Received date : 28 December 2017
Revised date : 21 April 2018
Accepted date : 27 June 2018

Please cite this article as: S.-Y. Lin, C.-C. Chiang, J.-B. Li, Z.-S. Hung, K.-M. Chao, Dynamic fine-tuning stacked auto-encoder neural network for weather forecast, *Future Generation Computer Systems* (2018), https://doi.org/10.1016/j.future.2018.06.052

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ACCEPTED MANUSCRIPT

Dynamic Fine-Tuning Stacked Auto-encoder Neural Network for Weather Forecast

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Abstract

With the advent of the big data era, dynamic and real-time data have increased in both volume and variety. It is difficult to make accurate predictions regarding data as they undergo rapid and dynamic changes. Autonomous cloud computing aims to reduce the time required for traditional machine learning. The stacked auto-encoder is a neural network approach in machine learning for feature extraction. It attempts to model high-level abstractions and to reduce data dimensions by using multiple processing layers. However, some common issues may occur during the implementation of deep learning or neural network models, such as over-complicated dimensions of the input data and difficulty in processing dynamic data. Therefore, combining the concept of dynamic data-driven system with a stacked auto-encoder neural network will help obtain the dynamic data correlation or relationship between the prediction results and actual data in a dynamic environment. This study applies the concept of a dynamic data-driven system to obtain the correlations between the prediction goals and number of different combination results. Association analysis, sequence analysis, and stacked auto-encoder neural network are employed to design a dynamic data-driven system based on deep learning.

Keywords: stacked auto-encoder neural network, association analysis, sequence analysis, dynamic data-driven application systems.

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