Convolutional neural networks and deep belief networks for analysing imbalanced class issue in handwritten dataset (Article)

Amri, A.A., Ismail, A.R., Zarir, A.A.
Department of Computer Science, Kulliyyah of Information and Communication Technology, International Islamic University Malaysia, P.O. Box 10, Kuala Lumpur, Malaysia

Abstract

Imbalanced class is one of the trials in classifying materials of big data. Data disparity produces a biased output of a model regardless how recent the technology is. However, deep learning algorithms such as convolutional neural networks and deep belief networks have proven to provide promising results in many research domains, especially in image processing as well as time series forecasting, intrusion detection, and classification. Therefore, this paper will investigate the effect of imbalanced data discrepancy of classes in MNIST handwritten dataset using convolutional neural networks and deep belief networks. Based on the experiment conducted, the results show that although the algorithm is suitable for multiple domains and have shown stability, the imbalanced distribution of data still able to affect the overall performance of the models.

Author keywords

Convolutional neural network, Deep belief network, Imbalanced class

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Ismail, A.R.; Department of Computer Science, Kulliyyah of Information and Communication Technology, International Islamic University Malaysia, P.O. Box 10, Kuala Lumpur, Malaysia; email:amelia@iium.edu.my © Copyright 2018 Elsevier B.V., All rights reserved.