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Abstract

APPLICATION OF DEEP BELIEF NETWOEK FOR DETECTION OF TRYPANOSOMIASIS PARASITE IN CATTLE USING BLOOD SMEAR IMAGE

Rotimi-Williams Bello, Abdullah Zawawi Talib, Ahmad Sufril Azlan Mohamed

School of Computer Sciences, Universiti Sains Malaysia, 11800 Pulau Pinang, Malaysia

Abstract:

Currently, disease management, symptoms classification and diagnoses are manually performed and are time consuming due to the fact that it takes longer time for infected animal to be manually diagnosed especially those animals which are remote from veterinary. These challenges motivate the development of detection tools that can perform automatically using deep learning approaches such as convolutional neural networks which have received great acceptance in literature. This paper seeks to improve on the deep learning methods of managing animal diseases by using a trained model based on pre-trained deep belief network by stacking restricted Boltzmann machines to classify 4000 animal blood images into parasite and non-parasite class using method of contrastive divergence. Features are extracted from the images and the visible variables of the deep belief network are initialized in order to train the deep belief networks. On a final note, the deep belief network is fine tuned discriminately to compute the probability of class labels by employing back-propagation. The method's accuracy and precision are higher than the previous state-of-the-art methods with 96.30% and 95.20% respectively. We belief this paper is among the most recent applications of deep belief network for detecting trypanosomiasis parasite in animal blood images.

Biography:

The Author has research interest in Vision & Image Processing, Computer security & Cryptography, Machine learning & Data mining. He is presently a PhD researcher with the Universiti Sains Malaysia.

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