ملخصات الأبحاث المقدمة من الدكتورة / هالة عبدالحميد مصطفى للترقية الى درجة استاذ مساعد

تخصص نظم المعلومات والمقدمة إلى اللجنة العلمية الدائمة للحاسبات و المعلومات

English Title	SHO-CNN: A metaheuristic optimization of convolutional neural network for multi-label news classification
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Author(s)	Muhammad Imran Nadeem; Kanwal Ahmed; Dun Li; Zhiyun Zheng; Hafsa Naheed; Abdullah Y. Muaad; Abdulrahman Alqarafi; Hala Abdel Hameed
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English Abstract	News media always pursue informing the public at large. It is impossible to overestimate the significance of understanding the semantics of news coverage. Traditionally, a news text is assigned to a single category; however, a piece of news may contain information from more than one domain. A multi-label text classification model for news is proposed in this paper. The proposed model is an automated expert system designed to optimize CNN's classification of multi-label news items. The performance of a CNN is highly dependent on its hyper parameters, and manually tweaking their values is a cumbersome and inefficient task. A high-level metaheuristic optimization algorithm, spotted hyena optimizer (SHO), has higher advanced exploration and exploitation capabilities. SHO generates a collection of solutions as a group of hyper parameters to be optimized, and the process is repeated until the desired optimal solution is achieved. SHO is integrated to automate the tuning of the hyperparameters of a CNN,

including learning rate, momentum, number of epochs, batch size, dropout, number of nodes, and activation function. Four publicly available news datasets are used to evaluate the proposed model. The tuned hyperparameters and higher convergence rate of the proposed model result in higher performance for multi-label news classification compared to a baseline CNN and other optimizations of CNNs. The resulting accuracies are 93.6%, 90.8%, 68.7%, and 95.4% for RCV1-v2, Reuters-21578, Slashdot, and NELA-GT-2019, respectively