عنوان مقاله:

Bearing Fault Detection Based on Audio Signal Using Pre-Trained Deep Neural Networks

محل انتشار:

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خلاصه مقاله:

In the current study, we delve into advanceddeep learning techniques, focusing on Convolutional NeuralNetwork (CNN) and deep Multi-Layer Perceptron (MLP)architectures to enhance fault detection in crucial machinecomponents such as rolling bearings. The main idea is toutilize a Stacked Auto-Encoder (SAE) to initialize the modeland improve its feature extraction capability. Moreover,departing from traditional vibration-based analyses, wepioneer the use of audio signals for fault detection. Theseideas are investigated for CNN and MLP architectures, and theperformance of the pre-trained models is compared with thatof two other models, namely models with the samearchitectures trained from scratch and the SAE encoderequipped with a softmax classifier. Comprehensive testing andcomparison reveal that integrating a pre-trained SAE modelinto the Deep Neural Network (DNN) can result in remarkableerror detection .through prior feature learning

کلمات کلیدی:

Fault Detection; Roller Bearing; Deep Learning; Audio signals; Pre-Training