

# Diagnosis and classification using ANFIS approach of stator and rotor faults in induction machine

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**Abstract:** Three-phase squirrel cage induction motors are one of the important elements of the industrial production system, and are mostly used because of their robustness, reliability, relatively simple construction and their low cost. Nevertheless, during their function in different process, this machine types are submitted to external and internal stresses which can lead to several electrical or mechanical failures. In this paper, we proposed a reliable approach for diagnosis and detection of stator short-circuit windings and rotor broken bars faults in induction motor under varying load condition based on relative energy for each level of stator current signal using wavelet packet decomposition which will be useful as data input of adaptive neuro-fuzzy inference system (ANFIS). The adaptive neuro-fuzzy inference system is able to identify the induction motor and it is proven to be capable of detecting broken bars and stator short-circuit faults with high precision. The diagnostic ANFIS algorithm is applicable to a variety of industrial process based on the induction machine for detection and classification of any faults types. This approach is applied under the MATLAB software®.

**Keywords :** Induction machine, Detection, diagnosis, neuro-fuzzy, Monitoring