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Machine Learning Based Techniques for FaultDetection and Classification in Industrial Induction Machines

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Abstract:

A new effective approach based on Machine learning (ML) techniques for fault detectionand classification of stator winding faults due to insulation failure and rotor bar breakingin industrial induction machines is presented in this paper. FDD techniques are broadlyclassified into three categories; signature-extraction, model based and knowledge-basedapproach. Recent advancement in computing performance and sensor technology permitthe use of advanced systems to achieve this objective. Computer-aided advanced diagnosis systems use pattern recognition which mainly comprises feature extraction, featureselection and feature classification respectively. Introduction of machine learningtechniques in feature classification using a knowledge-based approach is used for are liable automatic identification of stator winding faults and rotor bar breaking faults. Based on numerical modeling of Industrial induction motor along with stator winding inter-turn fault and rotor bar breaking fault a matlab Simulink model is designed to validate mathematically obtained results.