



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم



MONA MAGHRABY



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التوثيق الإلكتروني والميكرو فيلم



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جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

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DIAGNOSIS OF ROTARY MACHINES FAULTS USING ARTIFICIAL INTELLIGENCE

By

Mostafa Hussien Metwally Ahmed

A Thesis Submitted to the
Faculty of Engineering at Cairo University
in Partial Fulfillment of the
Requirements for the Degree of
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In
Mechanical Design and Production Engineering

FACULTY OF ENGINEERING, CAIRO UNIVERSITY
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Diagnosis of Rotary Machines Faults Using Artificial Intelligence

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Fault diagnosis for bearings, Artificial Neural Networks (ANNs), Adaptive Neuro-Fuzzy Inference System (ANFIS), Time Domain Features, and Auto-Regressive (AR) Model.

Summary:

This thesis employs three methods for diagnosing the bearing faults based on Fast Fourier Transform (FFT), Artificial Neural Networks (ANNs) and Adaptive Neuro-Fuzzy Inference System (ANFIS) models. The obtained data was classified into four main conditions: Healthy, Outer Faulty, Inner Faulty, and Ball Faulty. The four conditions were imported to ANN and ANFIS models. The input data was preprocessed before entering to ANN and ANFIS models by using three techniques: the normalized data in range (0-1), the time domain features, and finally the Auto Regressive (AR) model. The accomplished outcomes of ANN and ANFIS models in case of AR model give high accuracy results in classification issue.

Disclaimer

I hereby declare that this thesis is my own original work and that no part of it has been submitted for a degree qualification at any other university or institute.

I further declare that I have appropriately acknowledged all sources used and have cited them in the references section.

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Acknowledgment

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