

Fault Detection in Electric Motors using IEMSPCA and Neural Networks

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Project Description

- Measure Sound and Vibration from Electromotive Devices (EV motors, Starters, Alternators)
- Use Characteristics of Signals to Detect Faults, and Diagnose Fault Types
- IEMSPCA Classification
 - Principal Component Analysis
 - Wavelets
- Neural Network Classification
- Developed with D&V Electronics



Objective(s)

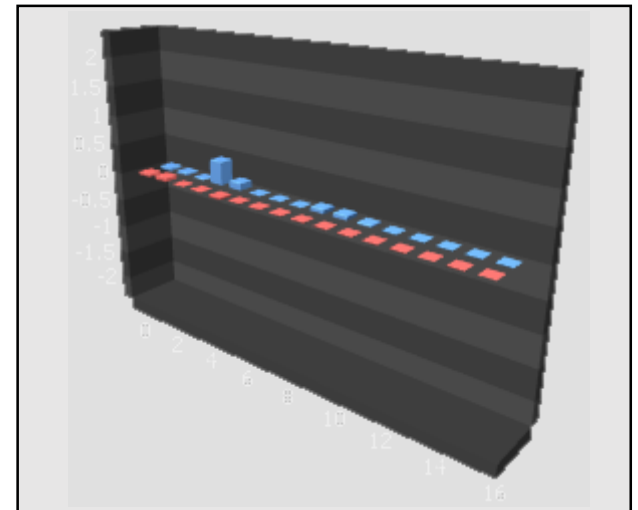
- Refine Methodology to Detect and Diagnose Faulty Electromotive Parts
- Improve Accuracy
- Reduce Processing Time

Tasks/Plan

- Investigate Incorporation of other Data Streams (Voltage, Current, Power)
- Refine Neural Network Design/Process
- Establish New Test Datasets
- Refine User Experience in D&V Software

Expected Outcome & Deliverables

- Improved Performance (Accuracy, Speed)
- Simplified Analysis Requiring Less Specialized Knowledge
- Improve Product Offering for D&V



Progress Report

- Case Studies (by Previous Student) show:
 - 100% Fault Detection with Microphone and Accelerometer
 - 87% Fault Detection and 80% Diagnosis with only a Microphone
- Working to Recreate Previous Successes
- Investigating Updated Machine Learning Technologies/Platforms

