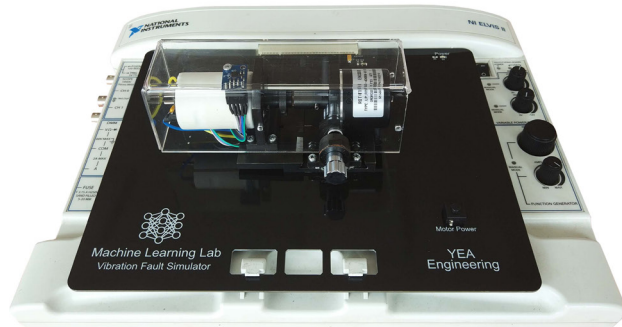


# Machine Learning Lab



## Overview

Machine Learning gained more popularity in the industrial applications in the past couple of years. This course helps students and engineers working in the field to learn and try the algorithms that are being used in industry.

With the help of vibration simulator, it is possible to simulate different types of faults in the system and collect real data from the accelerometers that are mounted on the motor. Trainees will be able to train the model with various algorithms and deploy it for system health prediction.

## Applications

Machine Learning Lab covers a wide range of applications, here are some popular ones:

- Vibration Fault Diagnosis
- Classification
- Prediction

## Features

- 7 hands-on experiments in Machine Learning
- Menu-driven navigation through the labs
- Student registration
- Step-by-step instructions for students
- Interactive study guide for each experiment
- Vibration Fault Simulator with manual alignment function.
- Representation of experimental results on the screen (graphs, signal spectrum, numeric indicators)
- Export of results in MS Excel format

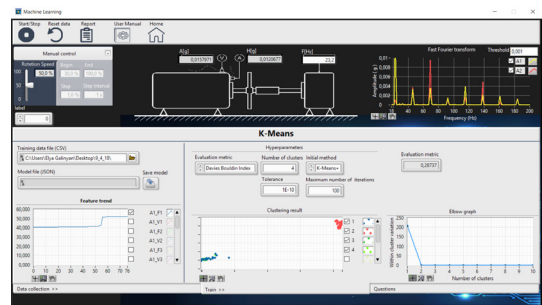
## Hardware and Software

- NI ELVIS II+
- Vibration Fault Simulator
- Machine learning software with Labs

# Machine Learning Lab

## List of Labs

1. Supervised Learning:
  - 1.1 Linear Regression
  - 1.2 Logistic Regression
  - 1.3 Neural Networks
2. Unsupervised Learning:
  - 2.1 Feature Reduction
  - 2.2 K-Means
  - 2.3 Density-based Spatial Clustering of Applications with Noise (DBSCAN)
  - 2.4 Gaussian Mixture Models



*User Interface*