# Abstract

Machine learning nowadays is essential for different software filed. Integrating machine learning with automation testing will play a great role to enhance, fasten and maintain test automation and the specially with hardware dependent test automation. Using supervised learning, unsupervised learning, reinforcement learning and recommendation system will all contribute in enhancement of test automation as the following:

# Test optimization

Tests could be more optimized as:

* Using supervised learning (ex: Linear regression) to predict which test cases are most likely to fail based on code changes, historical test results
* Test prioritization for more critical and current system related test
* Adding more features to the test to reach boundaries and edges achieving more coverage

# Error Classification

* Using supervised learning (ex: Logistic regression) defects could be classified by severity, risks, type, etc..

# Anomaly detection

* Using unsupervised learning, anomaly detection occurs by identifying issues according to sensor reads, logs and faults

# Grouping similar hardware failures

* Using unsupervised learning, clustering the same group of defect will help in identifying the root cause of failure

# Test generation

* Test cases, Test packages and Test automation could be generated based previous test artifacts and the analysis of the requirements and the history