# Pattern Recognition Report

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**Objective:** To implement a machine learning model for pattern recognition.

**Methodology:-**

* The first step of this project Is that we imported all the necessary libraries required in it.
* We imported the dateset from google drive( this project was done using google colab)
* Features were extracted for both train data and the test data.
* Feature vectors were reshaped
* Training data was passed to a Support vector classifier.
* Model was trained and was evaluated using confusion matrix
* All the required performance parameters we computed.

**Feature extraction:**

Mean, minimum, maximum, standard deviation, skewness, variance, and percentile features were extracted from the data. These features were extracted against every sensor of each device using numpy.

**Model training:**

A Support Vector Machine (SVM) model was trained using the extracted features. The kernel we used in this model was linear kernel.

**Model evaluation:**

The performance of the trained model was evaluated using a confusion matrix. Weighted f1 score, average f1 score and accuracy were computed using sklearn.

**Results:**

The SVM model trained on the extracted features performed well in recognizing patterns in the data. The confusion matrix showed that the model had a good balance of true positive, false positive, true negative, and false negative predictions.

The model has a good performance in recognizing patterns in the data. However, further refinement and optimization can be performed to improve the model's accuracy.