**CSE 6363 MACHINE LEARNING**

**HOMEWORK-2**

**A REPORT ON THE IMPLEMENTATION OF SUPPORT VECTOR MACHINE FOR FACE RECOGNITION**

Submitted by,

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**Introduction:**

Face Recognition is one of the most challenging and interesting classification problems in machine learning. Face recognition is a multiclass classification problem where the classifier is trained with the image vectors, weight vectors, etc., and the class of a new image is predicted. One such classifier is the Support Vector Machine.

**Implementation:**

The following are the steps that were followed during the implementation of Naïve Bayes Classifier.

* Split the dataset in two ways – first half as training and second half as testing and vice versa.
* Read the image data in the form of matrices
* Compute the vectors X,Y,H,f,A and c.
* Use the vectors f, c and the matrices H, A to solve the quadratic programming problem using the quadprog function in matlab. This completes the training phase
* For testing, for every new test image, the feature vector X is computed and solved for the equation against all w values.
* If the resulting vector is above 1, the image belongs to that class. This gives the prediction for that particular image.

**System Requirements:**

1. Matlab R2014a or higher.

**Execution Instructions:**

1. Extract the code package.
2. Open Matlab.
3. In the matlab file ‘svm\_1.m’, assign the path (1st\_Dataset) of the extracted ‘1st\_Dataset\_Train’ folder to train\_dir variable, assign the path of the extracted ‘1st\_Dataset\_Test’ folder to test\_path and test\_dir variable. This will give you predictions for one set of training and test images.
4. Repeat step 3 with ‘2nd\_Dataset’ to get predictions for another set of training and test images.
5. Execute the file by clicking Run on the toolbar in the matlab window.