## Question 1

### Dataset

There are two different datasets

1. Face Data: Consists of 715 images of 11 different classes with each data point being an image of size 192x168
2. CIFAR 10: Consist of 50,000 images as train data and 10,000 images as test data with each data being an image of size 32x32 assigned to 10 distinct classes.

### Assumptions and Preprocessing

Preprocessing of data has been done mainly to avoid “Memory Error”

* For Dataset 1, each image has been resized into 50x50.
* For dataset 2, test and train images has been merged into a single Dataset as needed by the Question.

### Observation

LDA DATASET 1

|  |  |
| --- | --- |
| Fold | Accuracy |
| 1 | 0.6139 |
| 2 | 0.6883 |
| 3 | 0.6232 |
| 4 | 0.6837 |
| 5 | 0.7348 |

|  |  |
| --- | --- |
| Mean | 0.6688 |
| Standard Deviation | 0.0448 |

PCA DATASET 1

|  |  |
| --- | --- |
| Fold | Accuracy |
| 1 | 0.9069 |
| 2 | 0.9116 |
| 3 | 0.9023 |
| 4 | 0.9023 |
| 5 | 0.9116 |

|  |  |
| --- | --- |
| Mean | 0.9069 |
| Standard Deviation | 0.0041 |

PCA – LDA DATASET 1

|  |  |
| --- | --- |
| Fold | Accuracy |
| 1 | 0.7953 |
| 2 | 0.7581 |
| 3 | 0.7813 |
| 4 | 0.7441 |
| 5 | 0.8093 |

|  |  |
| --- | --- |
| Mean | 0.7776 |
| Standard Deviation | 0.0237 |

LDA – PCA DATASET 1

|  |  |
| --- | --- |
| Fold | Accuracy |
| 1 | 0.3116 |
| 2 | 0.3953 |
| 3 | 0.4139 |
| 4 | 0.3162 |
| 5 | 0.2039 |

|  |  |
| --- | --- |
| Mean | 0.3293 |
| Standard Deviation | 0.0726 |

LDA DATASET 2

|  |  |
| --- | --- |
| Fold | Accuracy |
| 1 | 0.3369 |
| 2 | 0.3234 |
| 3 | 0.3371 |
| 4 | 0.3336 |
| 5 | 0.3369 |

|  |  |
| --- | --- |
| Mean | 0.3322 |
| Standard Deviation | 0.0071 |

PCA DATASET 2

|  |  |
| --- | --- |
| Fold | Accuracy |
| 1 | 0.3894 |
| 2 | 0.3937 |
| 3 | 0.3872 |
| 4 | 0.3952 |
| 5 | 0.3914 |

|  |  |
| --- | --- |
| Mean | 0.3926 |
| Standard Deviation | 0.0030 |