Assignment report

GROUP

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TASK 1: BAYESIAN CLASSIFIER PART (a)

(i) **When the samples of a given characters are modelled by separate covariance matrix.**

Accuracy of character E is : 94
Accuracy of character C is : 90
Accuracy of character L is : 97
Overall Accuracy of the this model is : 93.667

(ii) **When the samples of all given characters are pooled to generate a common diagonal covariance matrix.**

Accuracy of character E is : 84
Accuracy of character C is : 76
Accuracy of character L is : 98
Overall Accuracy of the this model is : 86

(iii) **When the covariance matrix of each class is forced to be identity matrix.**

Accuracy of character E is : 87
Accuracy of character C is : 85
Accuracy of character L is : 100

Overall Accuracy of the this model is : 90.6667

Here we use the regularization term to be 0.7.

PART (b)

For part (i) following images are misclassified:

For character E : 201 222 230 234 245 247

For character C : 205 221 222 223 238 274 288 293 295 299

For character L : 226 239 244

For part (ii) following images are misclassified

For character E : 215 216 218 219 220 222 223 228 229 230 234 241 245 255 264 275

For character C : 210 212 214 221 223 233 234 238 242 245 248 249 250 256 259 267 270 273 274 279 282 283 284 285

For character L : 246 247

For part (iii) following images are misclassified

For character E : 215 216 218 219 222 223 229 230 236 241 245 254 255

For character C : 210 212 214 221 223 234 238 242 245 250 256 273 274 283 285

For character L : NONE

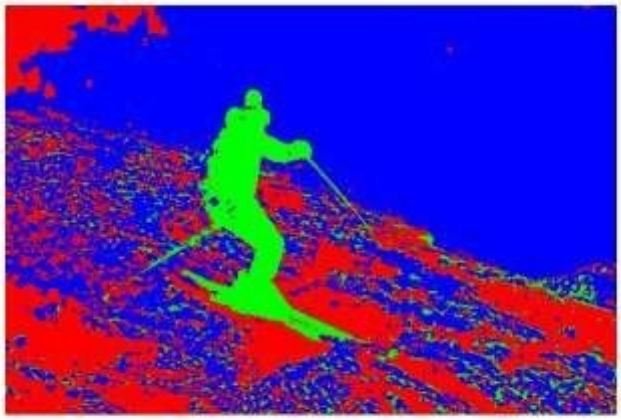


Figure 5 Output for 5 ite

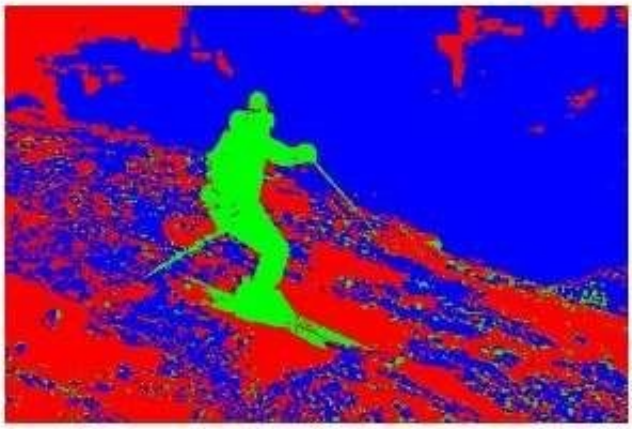


Figure 6 Output for 10

TASK 2: GMM BASED CLUSTERING

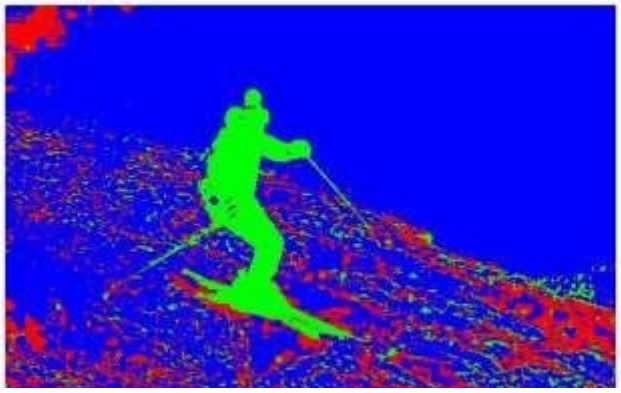
PART (a) Segmented Output

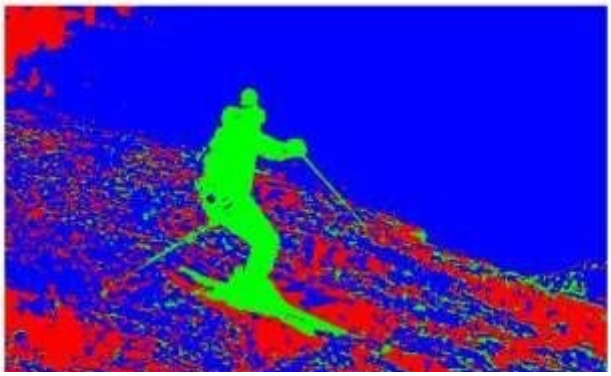
Figure 1 Output for 1 iteration

Figure 2 Output for 2 iteration

Figure 3 Output for 3 iteration

Figure 4 Output for 4 iteration





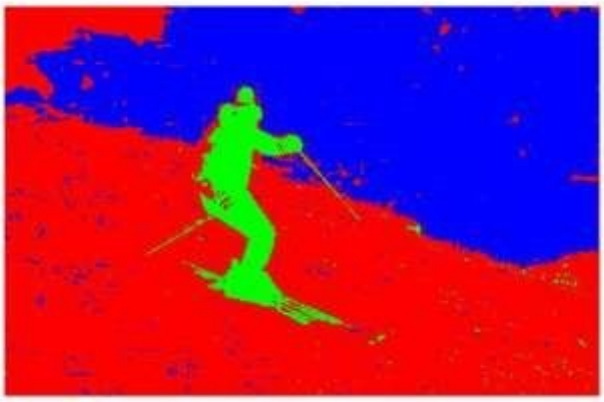


Figure 9 Output for 50 iteration

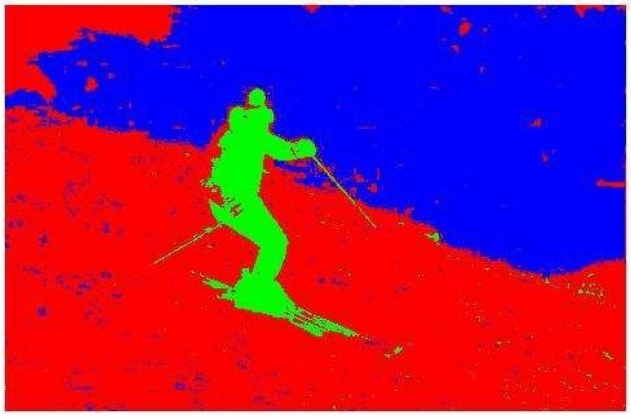


Figure 1 Output for 100 iteration

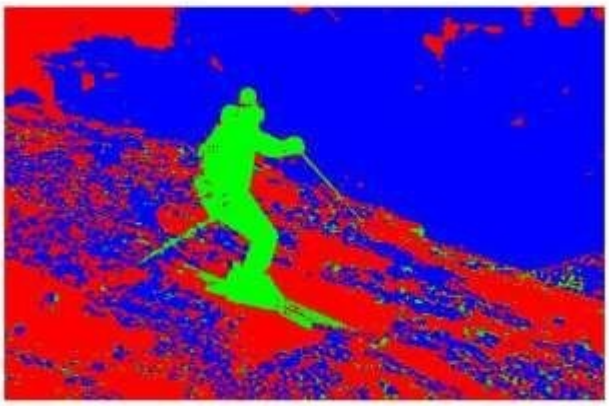


Figure 7 Output for 15 iteration

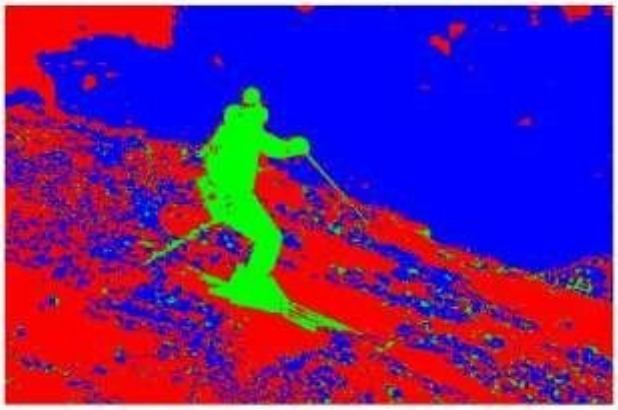


Figure 8 Output for 25 iteration

PART (b)

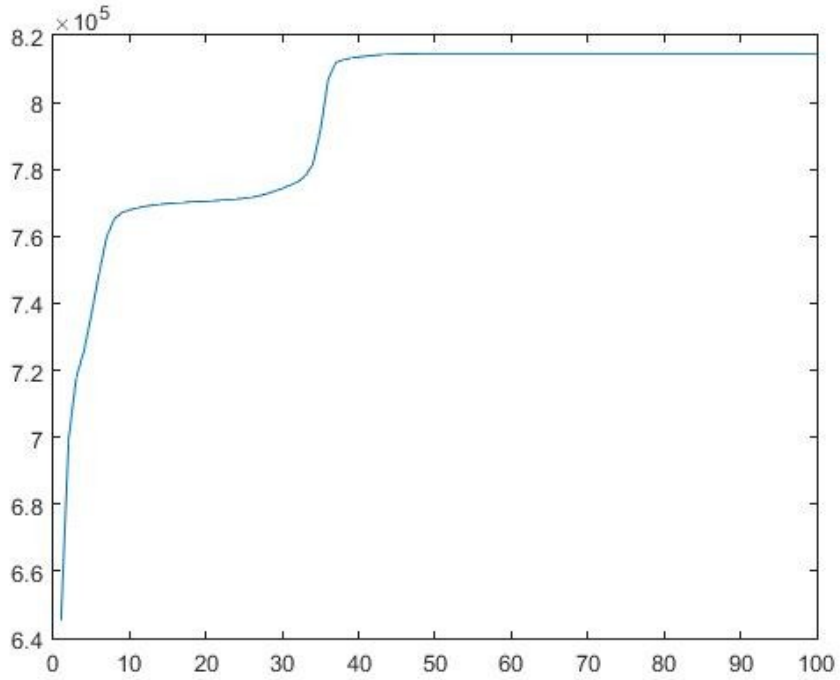


Figure : Log likelihood function for 100 iterations

TASK 3

Figure 1 Output for Top five eigen faces





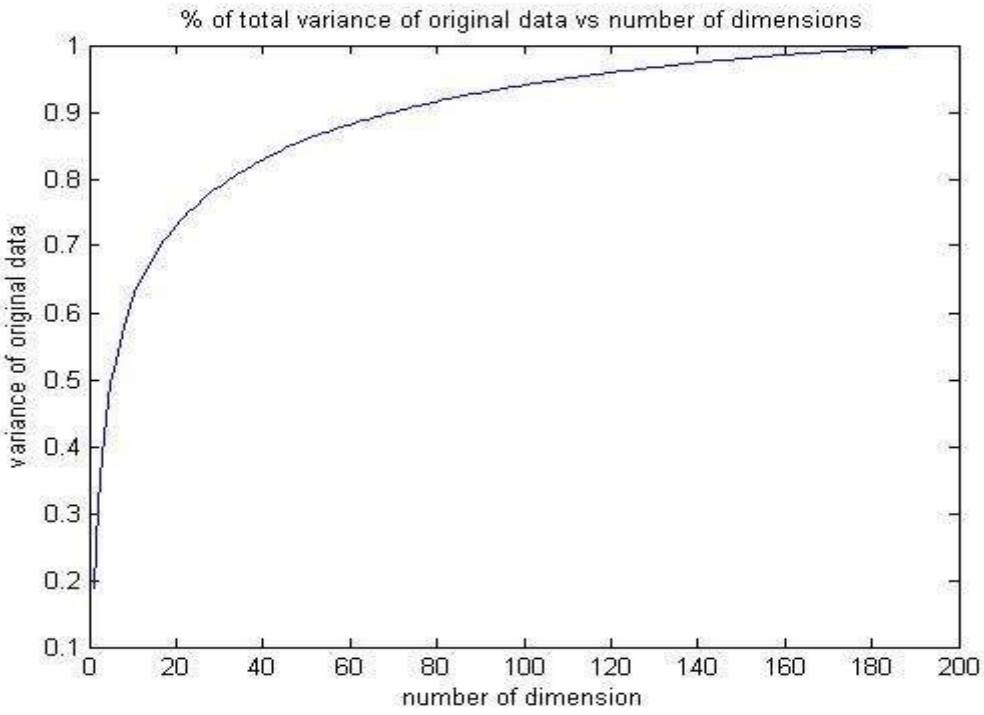


Figure 4 Total variance vs no of dimensions

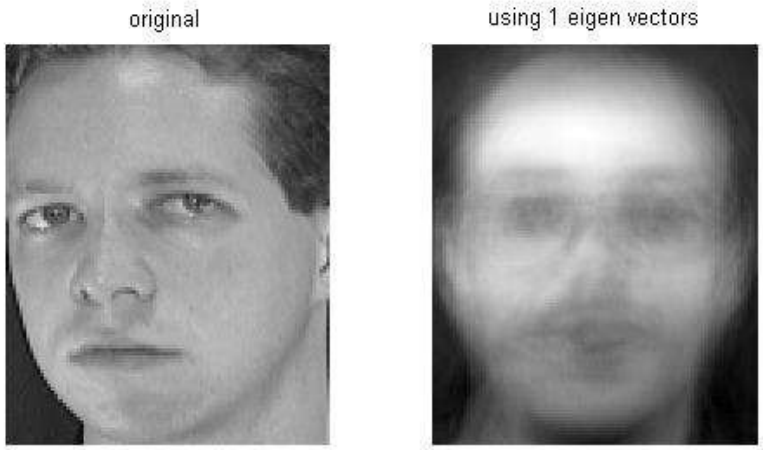


Figure 6 face input 1 reconstruction using largest eigenvector

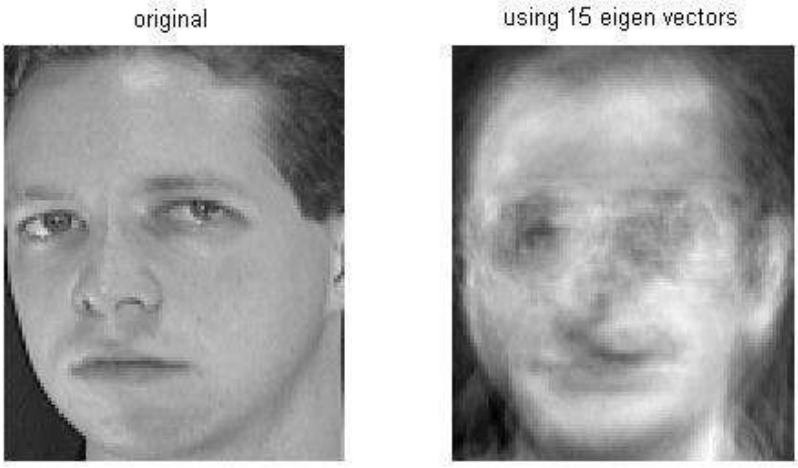


Figure 5 face input 1 reconstruction using top 15 eigenvector

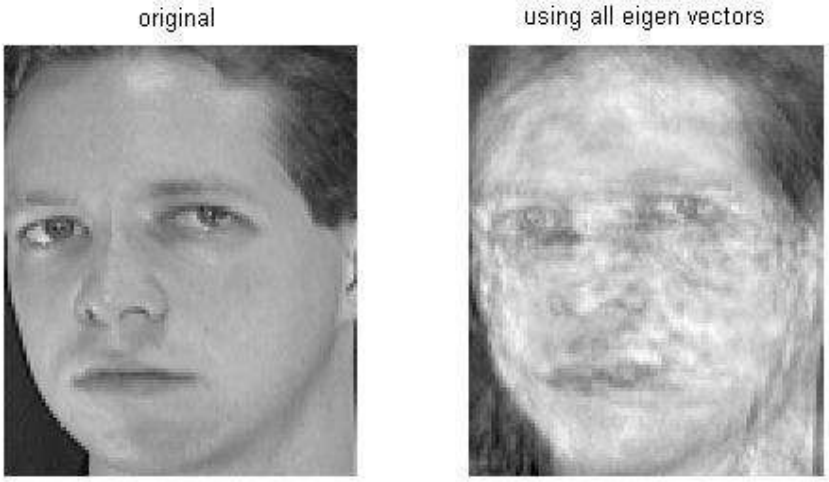


Figure 8 face input 1 reconstruction using all eigenvector

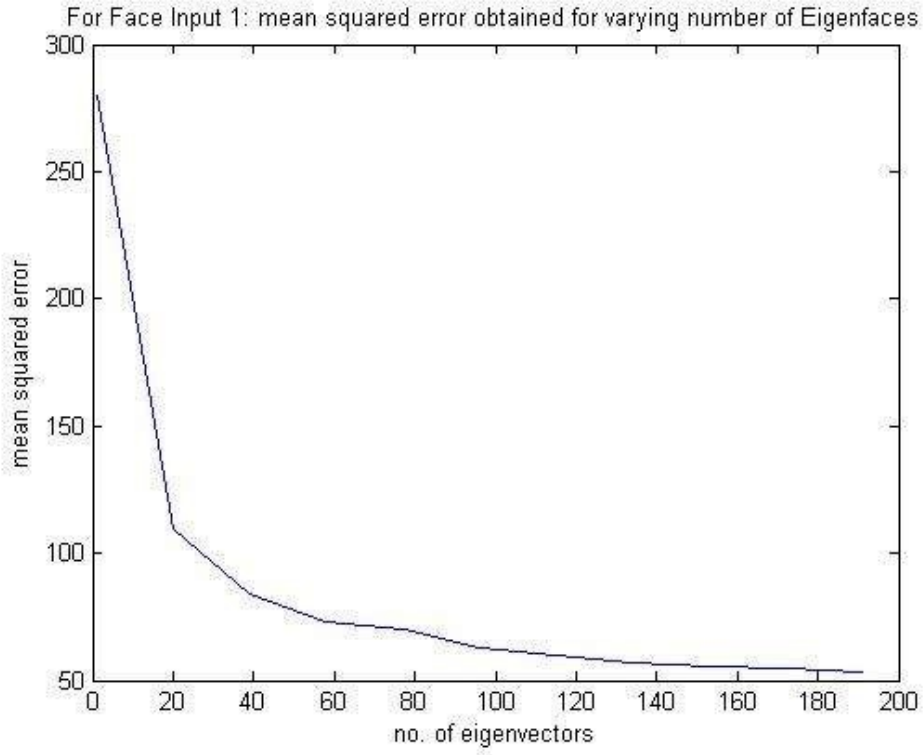


Figure 7 Mean squared error for face input 1 for different eigenvectors

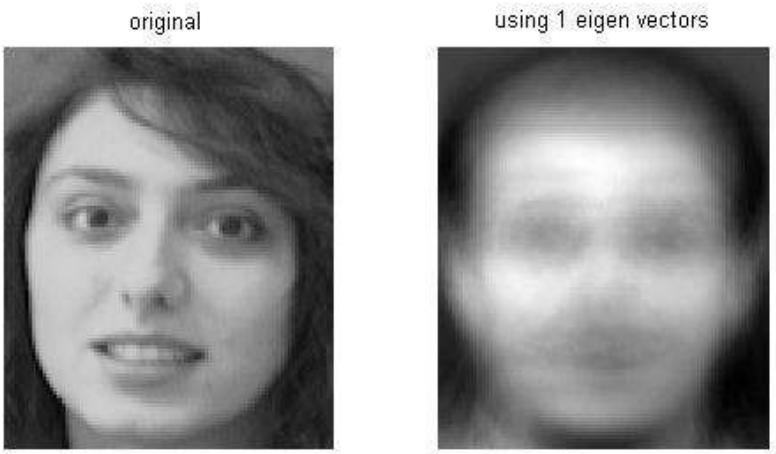


Figure 10 face input 2 reconstruction using largest eigenvector

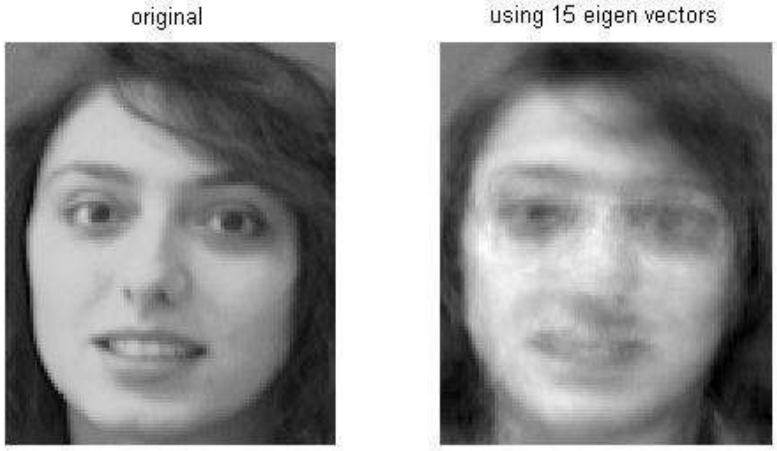


Figure 9 face input 2 reconstruction using top 15 eigenvector

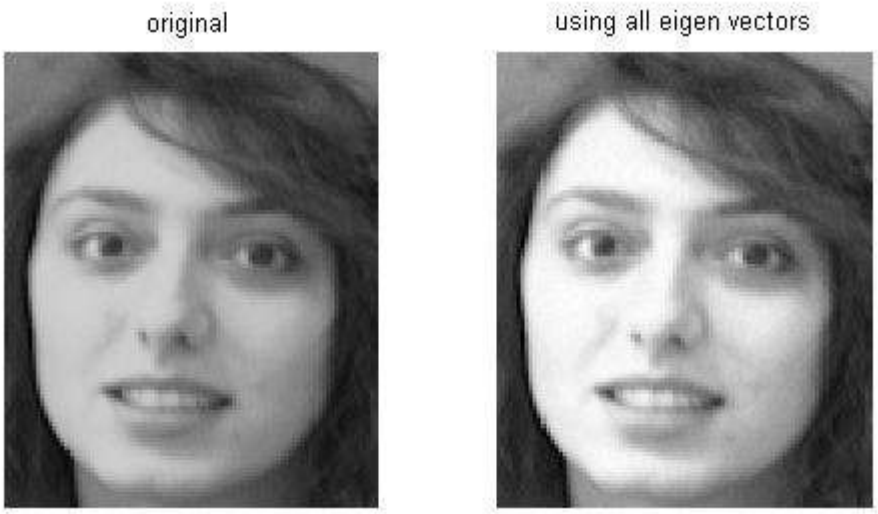


Figure 12 face input 2 reconstruction using all eigenvector

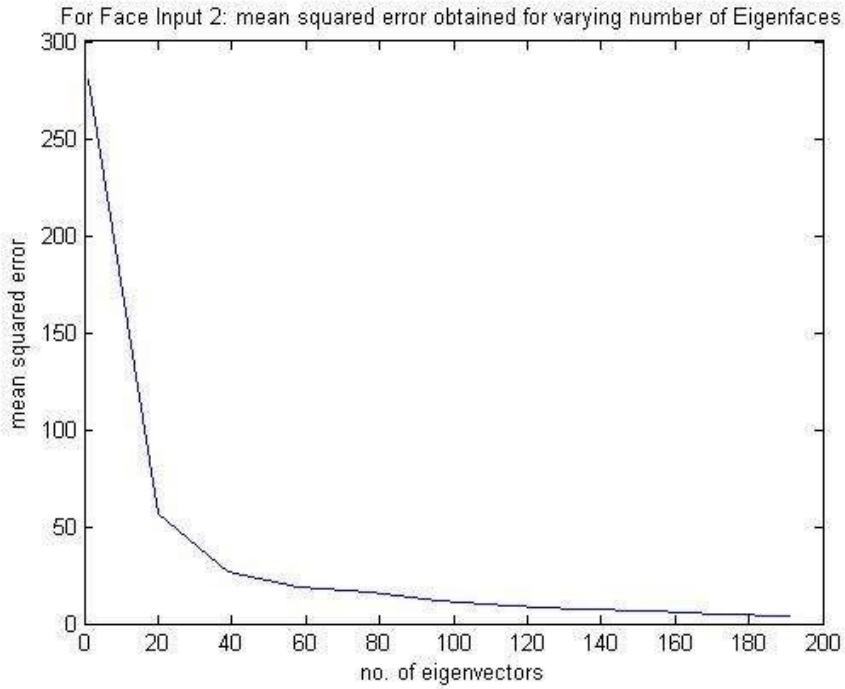


Figure 11 mean squared error for face input 2

Task 4

SVM

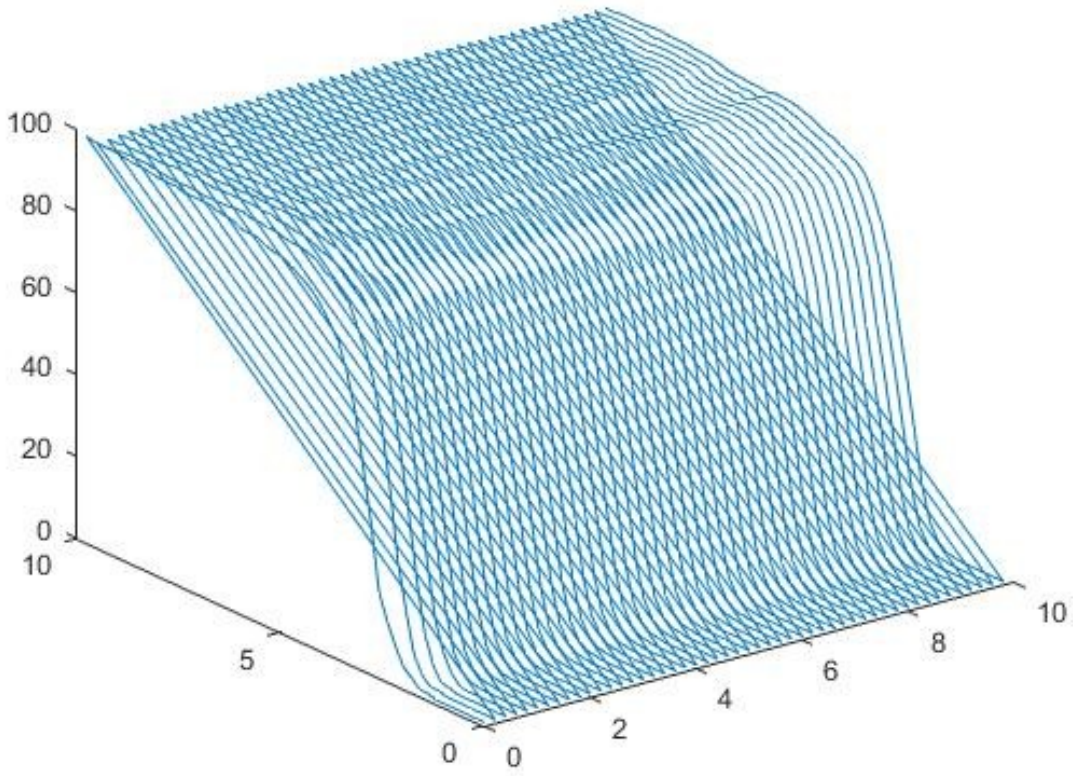


Figure c vs g vs accuracy