

## MAIN - RESULT OF GENERATIVE MODELS

## Point 1

## Error rate for feature 1 to 6

Error rate of Binary MVG: 7.00%  
 Error rate of Binary Tied: 9.30%  
 Error rate of Naive Bayes: 7.20%

## Point 2

## Covariance of class 0:

```
[[0.60095651, 0.00005159, 0.01905891, 0.01925299, 0.01280394, -0.01347216]
[0.00005159, 1.44722543, -0.01613401, -0.01585615, -0.02645291, 0.02291398]
[0.01905891, -0.01613401, 0.56534890, -0.00184344, -0.00691446, 0.01689283]
[0.01925299, -0.01585615, -0.00184344, 0.54161520, 0.00525171, 0.01357178]
[0.01280394, -0.02645291, -0.00691446, 0.00525171, 0.69606764, 0.01584384]
[-0.01347216, 0.02291398, 0.01689283, 0.01357178, 0.01584384, 0.68651971]]
```

## Covariance of class 1:

```
[[1.44809527, -0.01472224, 0.00557010, 0.01574159, 0.01949712, -0.00017668]
[-0.01472224, 0.55339080, -0.01121687, -0.00906473, -0.01465899, 0.01634920]
[0.00557010, -0.01121687, 0.55748023, 0.02756097, -0.00376966, -0.01459769]
[0.01574159, -0.00906473, 0.02756097, 0.56965701, -0.01169834, 0.03499319]
[0.01949712, -0.01465899, -0.00376966, -0.01169834, 1.34201767, 0.01694541]
[-0.00017668, 0.01634920, -0.01459769, 0.03499319, 0.01694541, 1.30371880]]
```

## Correlation of class 0:

```
[[1.00, 0.00, 0.03, 0.03, 0.02, -0.02]
[0.00, 1.00, -0.02, -0.02, -0.03, 0.02]
[0.03, -0.02, 1.00, -0.00, -0.01, 0.03]
[0.03, -0.02, -0.00, 1.00, 0.01, 0.02]
[0.02, -0.03, -0.01, 0.01, 1.00, 0.02]
[-0.02, 0.02, 0.03, 0.02, 0.02, 1.00]]
```

## Correlation of class 1:

```
[[1.00, -0.02, 0.01, 0.02, 0.01, -0.00]
[-0.02, 1.00, -0.02, -0.02, -0.02, 0.02]
[0.01, -0.02, 1.00, 0.05, -0.00, -0.02]
[0.02, -0.02, 0.05, 1.00, -0.01, 0.04]
[0.01, -0.02, -0.00, -0.01, 1.00, 0.01]
[-0.00, 0.02, -0.02, 0.04, 0.01, 1.00]]
```

## Point 3 - No result to calculate

## Point 4

## Feature 1 to 4

Error rate of Binary MVG: 7.95%  
 Error rate of Binary Tied: 9.50%  
 Error rate of Naive Bayes: 7.65%

## Point 5

## Feature 1 and 2

Error rate of Binary MVG: 36.50%  
 Error rate of Binary Tied: 49.45%  
 Error rate of Naive Bayes: 36.30%

## Feature 3 and 4

Error rate of Binary MVG: 9.45%  
 Error rate of Binary Tied: 9.40%  
 Error rate of Naive Bayes: 9.45%

## Point 6 - PCA + MVG

## PCA + MVG m = 1

```
[[-0.00899940]
[-0.02589040]
[0.70547914]
[-0.70477274]
[-0.06959289]
[0.00030960]]
```

Error rate of Binary MVG: 9.25%  
 Error rate of Binary Tied: 9.35%  
 Error rate of Naive Bayes: 9.25%

## PCA + MVG m = 2

```
[[-0.00899940, -0.64772376]
[-0.02589040, 0.41438438]
[0.70547914, -0.05305315]
[-0.70477274, 0.00278576]
[-0.06959289, -0.63628006]
[0.00030960, 0.03263124]]
```

Error rate of Binary MVG: 8.80%  
 Error rate of Binary Tied: 9.25%  
 Error rate of Naive Bayes: 8.85%

## PCA + MVG m = 3

```
[[-0.00899940, -0.64772376, -0.36637957]
[-0.02589040, 0.41438438, 0.24015515]
[0.70547914, -0.05305315, 0.02498510]
[-0.70477274, 0.00278576, -0.03442121]
[-0.06959289, -0.63628006, 0.56301216]
[0.00030960, 0.03263124, 0.69949965]]
Error rate of Binary MVG: 8.80%
Error rate of Binary Tied: 9.25%
Error rate of Naive Bayes: 9.00%
PCA + MVG m = 4
[[-0.00899940, -0.64772376, -0.36637957, -0.65903174]
[-0.02589040, 0.41438438, 0.24015515, -0.63377125]
[0.70547914, -0.05305315, 0.02498510, -0.01901147]
[-0.70477274, 0.00278576, -0.03442121, -0.01147969]
[-0.06959289, -0.63628006, 0.56301216, 0.24309683]
[0.00030960, 0.03263124, 0.69949965, -0.32314376]]
Error rate of Binary MVG: 8.05%
Error rate of Binary Tied: 9.25%
Error rate of Naive Bayes: 8.85%
PCA + MVG m = 5
[[-0.00899940, -0.64772376, -0.36637957, -0.65903174, 0.09819391]
[-0.02589040, 0.41438438, 0.24015515, -0.63377125, -0.60520450]
[0.70547914, -0.05305315, 0.02498510, -0.01901147, 0.01550794]
[-0.70477274, 0.00278576, -0.03442121, -0.01147969, 0.08244839]
[-0.06959289, -0.63628006, 0.56301216, 0.24309683, -0.46247497]
[0.00030960, 0.03263124, 0.69949965, -0.32314376, 0.63495208]]
Error rate of Binary MVG: 7.10%
Error rate of Binary Tied: 9.30%
Error rate of Naive Bayes: 8.75%
PCA + MVG m = 6
[[-0.00899940, -0.64772376, -0.36637957, -0.65903174, 0.09819391, 0.04662703]
[-0.02589040, 0.41438438, 0.24015515, -0.63377125, -0.60520450, -0.04474705]
[0.70547914, -0.05305315, 0.02498510, -0.01901147, 0.01550794, -0.70587418]
[-0.70477274, 0.00278576, -0.03442121, -0.01147969, 0.08244839, -0.70368550]
[-0.06959289, -0.63628006, 0.56301216, 0.24309683, -0.46247497, -0.01851097]
[0.00030960, 0.03263124, 0.69949965, -0.32314376, 0.63495208, 0.04526944]]
Error rate of Binary MVG: 7.00%
Error rate of Binary Tied: 9.30%
Error rate of Naive Bayes: 8.90%
```