

## **Advance ML**

**PCA**, If your goal is to reduce dimensions without considering class labels (for both classification & regression).

**LDA**, If you're working on classification problems and need to maximize class separation.

**Kernel\_PCA**, If your data is nonlinear and standard PCA/LDA isn't capturing patterns well.

### **PCA Dimensionality reduction**

| PCA | Logistic | SVMI | SVMnl | KNN  | Navie | Decision | Random |
|-----|----------|------|-------|------|-------|----------|--------|
| 4   | 0.97     | 0.94 | 0.94  | 0.97 | 1.0   | 0.97     | 0.97   |
| 3   | 1.0      | 1.0  | 1.0   | 1.0  | 1.0   | 0.97     | 0.97   |
| 2   | 0.97     | 0.97 | 0.97  | 0.97 | 0.97  | 0.97     | 0.97   |

Based on above table after performing dimensionality reduction selecting 3 components give best results

### **LDA Discriminant analysis**

| LDA | Logistic | SVMI | SVMnl | KNN  | Navie | Decision | Random |
|-----|----------|------|-------|------|-------|----------|--------|
| 2   | 1.0      | 0.97 | 1.0   | 0.97 | 0.97  | 0.97     | 1.0    |
| 1   | 0.83     | 0.83 | 0.83  | 0.83 | 0.83  | 0.89     | 0.86   |

Based on above table after performing discriminant analysis selecting 2 components give best results

### **Kernel\_PCA**

| Kernel_PCA | Logistic | SVMnl | KNN  | Navie |
|------------|----------|-------|------|-------|
| 2          | 1.0      | 0.86  | 0.97 | 1.0   |
| 3          | 0.97     | 0.86  | 0.97 | 0.97  |

Based on above table after performing for best pattern if your data has no linear then selecting 2 features gives best results