Performance analysis by using Decision Tree classifier with reduction techniques:

Accuracy:

Accuracy	Iris	MNIST
PCA	0.7	1.0
LDA	0.7	0.98
KPCA	0.3	0.33

Shape for Iris after splitting into train and test set

Shape for MNIST is after taking 1500 sample and splitting into train and test sets

I have took 1500 samples

Shape for training data

Shape	Iris	MNIST
PCA	(120,2)	(1200, 2)
LDA	(120,2)	(1200, 2)
KPCA	(120,2)	(1200, 2)

Precision:

Precision	Iris	MNIST
PCA	0.703	1.000
LDA	0.700	1.000
KPCA	0.111	0.111

F1 Score

F1 Score	Iris	MNIST
PCA	0.693	1.000
LDA	0.699	1.000
KPCA	0.167	0.167

Recall

Recall	Iris	MNIST
PCA	0.700	1.000
LDA	0.700	1.000
KPCA	0.333	0.333

Metrics for MNIST

PCA

	precision	recall	f1-score	support
0	1.00	1.00	1.00	100
1	1.00	1.00	1.00	100
2	1.00	1.00	1.00	100
accuracy			1.00	300
macro avg	1.00	1.00	1.00	300
weighted avg	1.00	1.00	1.00	300

LDA

	precision	recall	f1-score	support
0	1.00	1.00	1.00	100
1	1.00	1.00	1.00	100
2	1.00	1.00	1.00	100
accuracy			1.00	300
macro avg	1.00	1.00	1.00	300
weighted avg	1.00	1.00	1.00	300

KPCA

	precision	recall	f1-score	support
0	0.00	0.00	0.00	100
1	0.33	1.00	0.50	100
2	0.00	0.00	0.00	100
accuracy			0.33	300
macro avg	0.11	0.33	0.17	300
weighted avg	0.11	0.33	0.17	300

Running time for mnist:

PCA: 34.853498220443726 sec

LDA: 34.86221218109131 sec

KPCA: 76.08571243286133 sec

Metrics for Iris

PCA

precision	recall	f1-score	support
0	1.00	1.00	1.00 10
1	0.54	0.70	0.61 10
2	0.57	0.40	0.47 10
accuracy			0.70 30
macro avg	0.70	0.70	0.69 30
weighted avg	0.70	0.70	0.69 30

LDA

precision	recall	f1-score	support
0	1.00	1.00	1.00 10
1	0.56	0.50	0.53 10
2	0.55	0.60	0.57 10
accuracy			0.70 30
macro avg	0.70	0.70	0.70 30
weighted avg	0.70	0.70	0.70 30

KPCA

	precision	recall	f1-score	support
0	0.00	0.00	0.00	10
1	0.33	1.00	0.50	10
2	0.00	0.00	0.00	10
accuracy			0.33	30
macro avg	0.11	0.33	0.17	30
weighted avg	0.11	0.33	0.17	30

Running time iris:

PCA: 0.011560201644897461 sec

LDA: 0.011008501052856445 sec

KPCA: 0.02403736114501953 sec