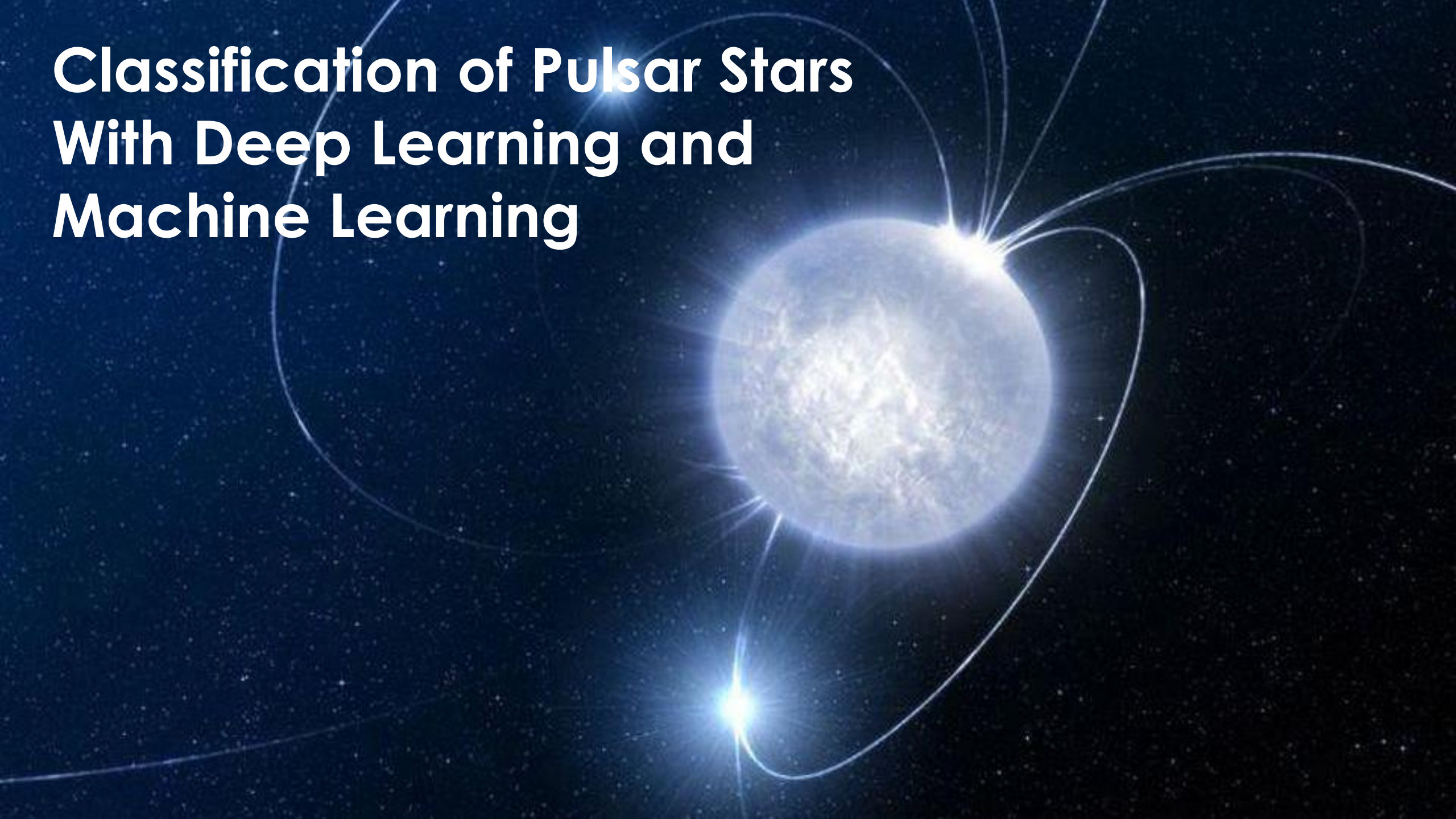
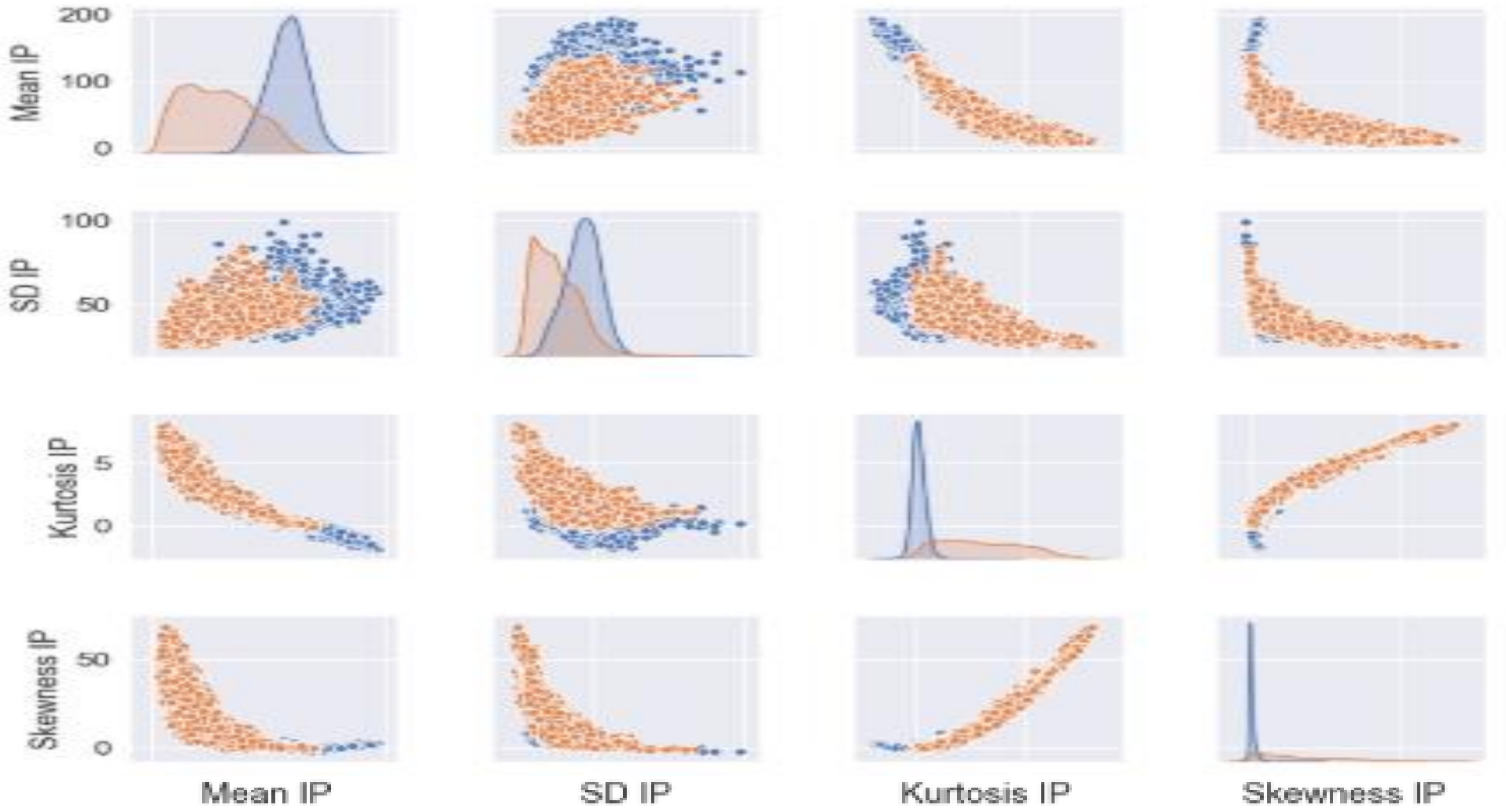
Classification of Pulsar Stars With Deep Learning and Machine Learning



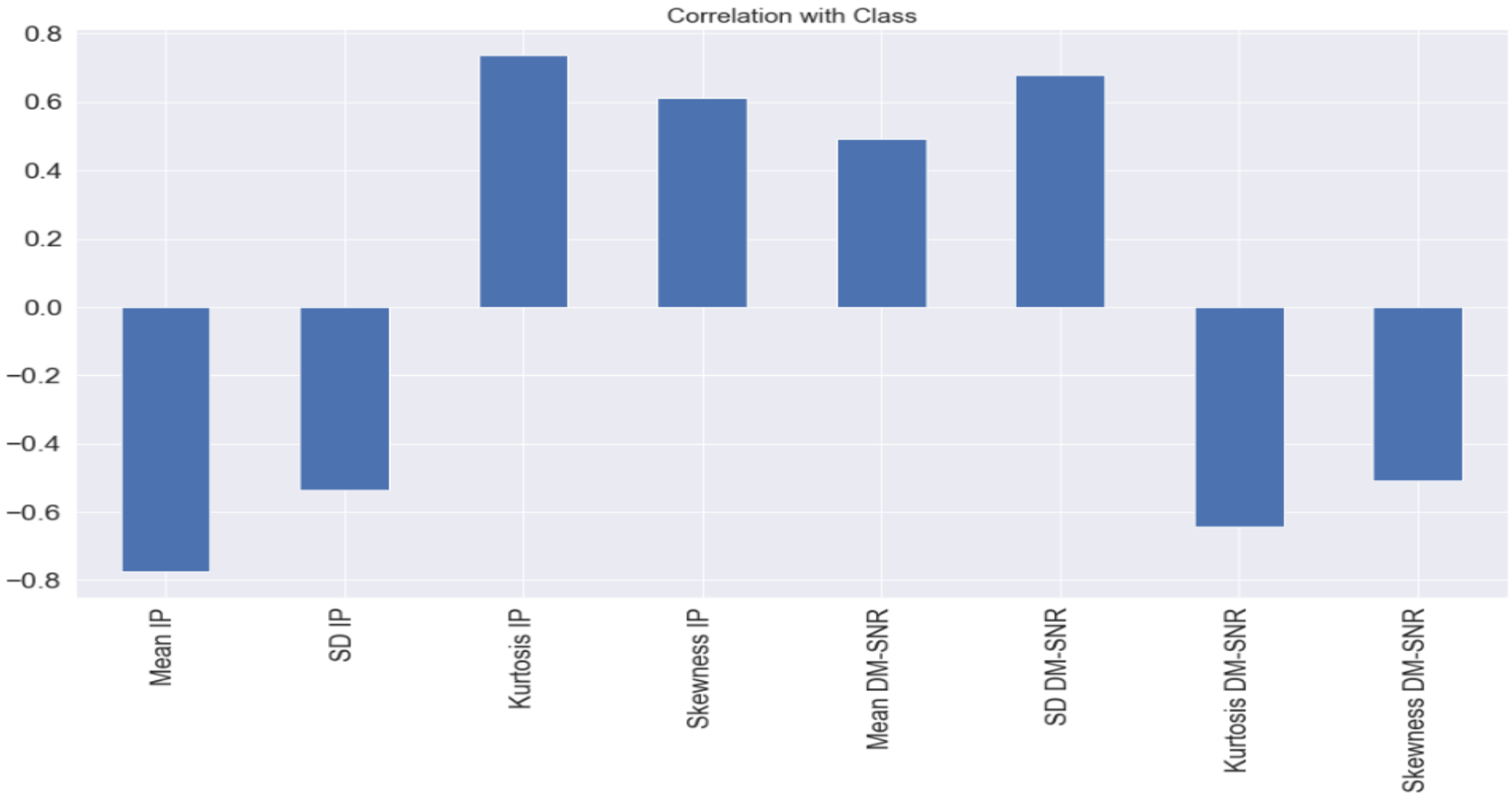
The Pulsar Stars Dataset

- Mean of the integrated profile.
- Standard deviation of the integrated profile.
- Excess kurtosis of the integrated profile.
- Skewness of the integrated profile.
- Mean of the DM-SNR curve.
- Standard deviation of the DM-SNR curve.
- Excess kurtosis of the DM-SNR curve.
- Skewness of the DM-SNR curve.
- Class

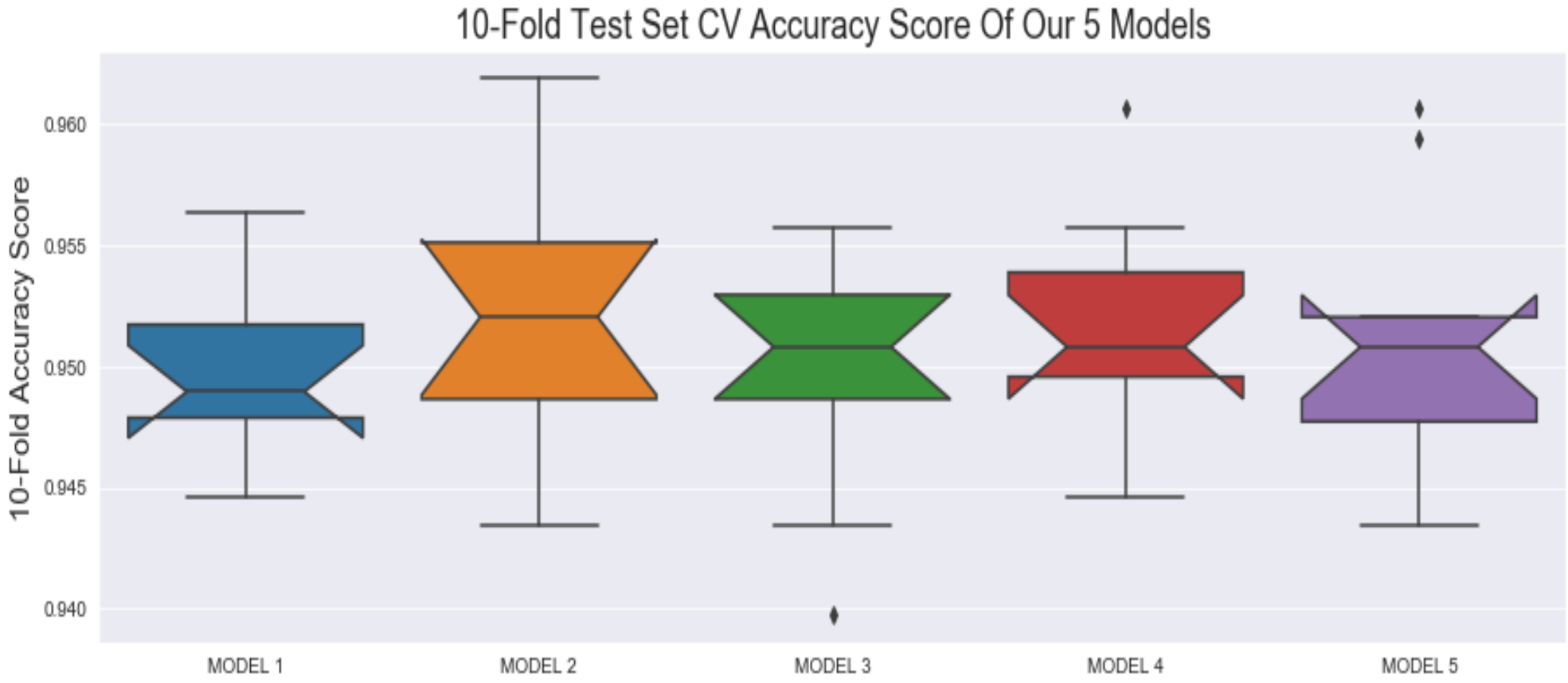
Orange = Pulsar Star



Feature Correlation by Target Class



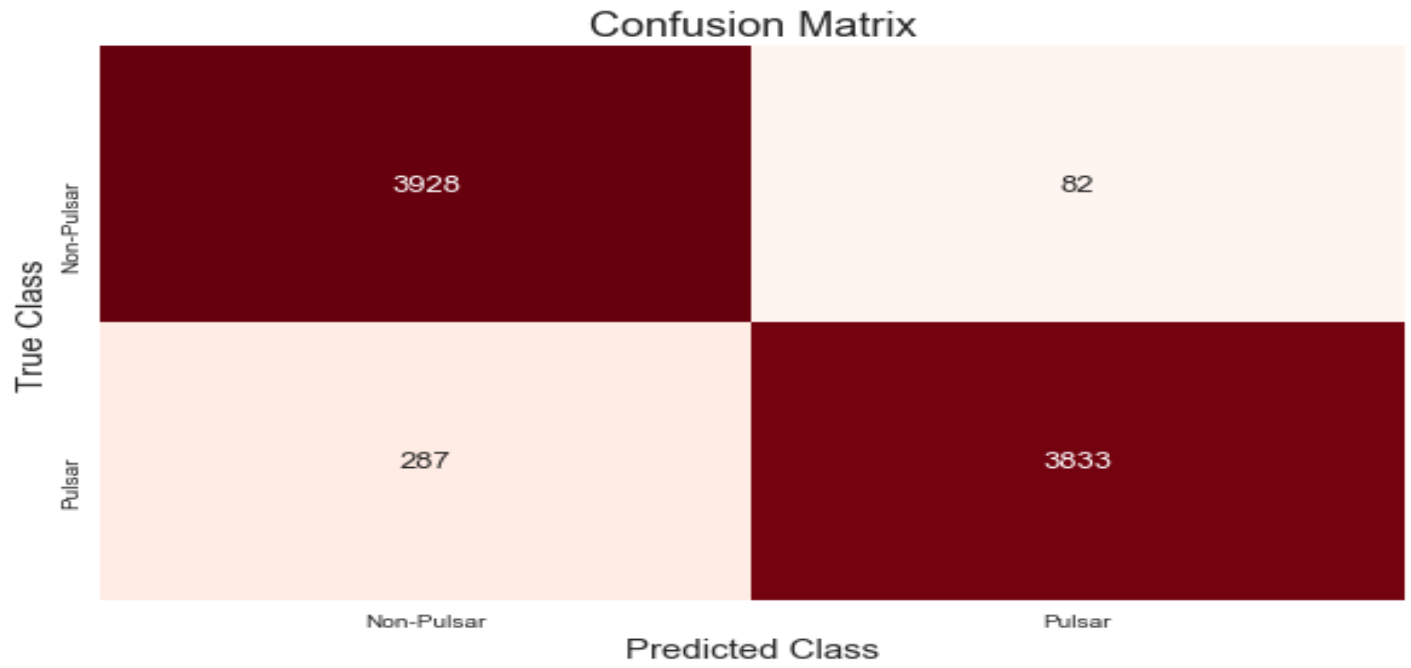
Deep Learning Models



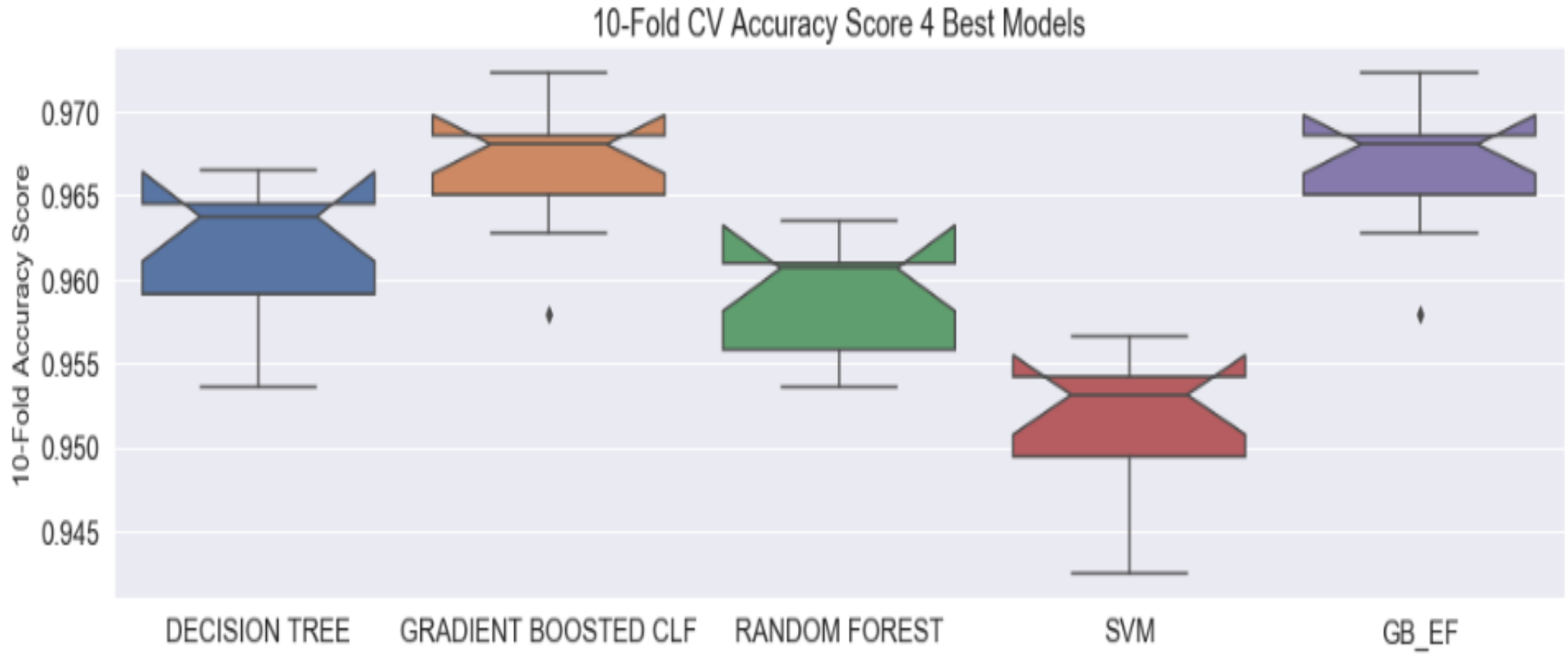
Best Deep Learning Model

	precision	recall	f1-score	support
0	0.93	0.98	0.96	4010
1	0.98	0.93	0.95	4120
accuracy			0.95	8130
macro avg	0.96	0.95	0.95	8130
weighted avg	0.96	0.95	0.95	8130

```
conf_matrix(y_true, y_pred_4, cmap="Reds")
```



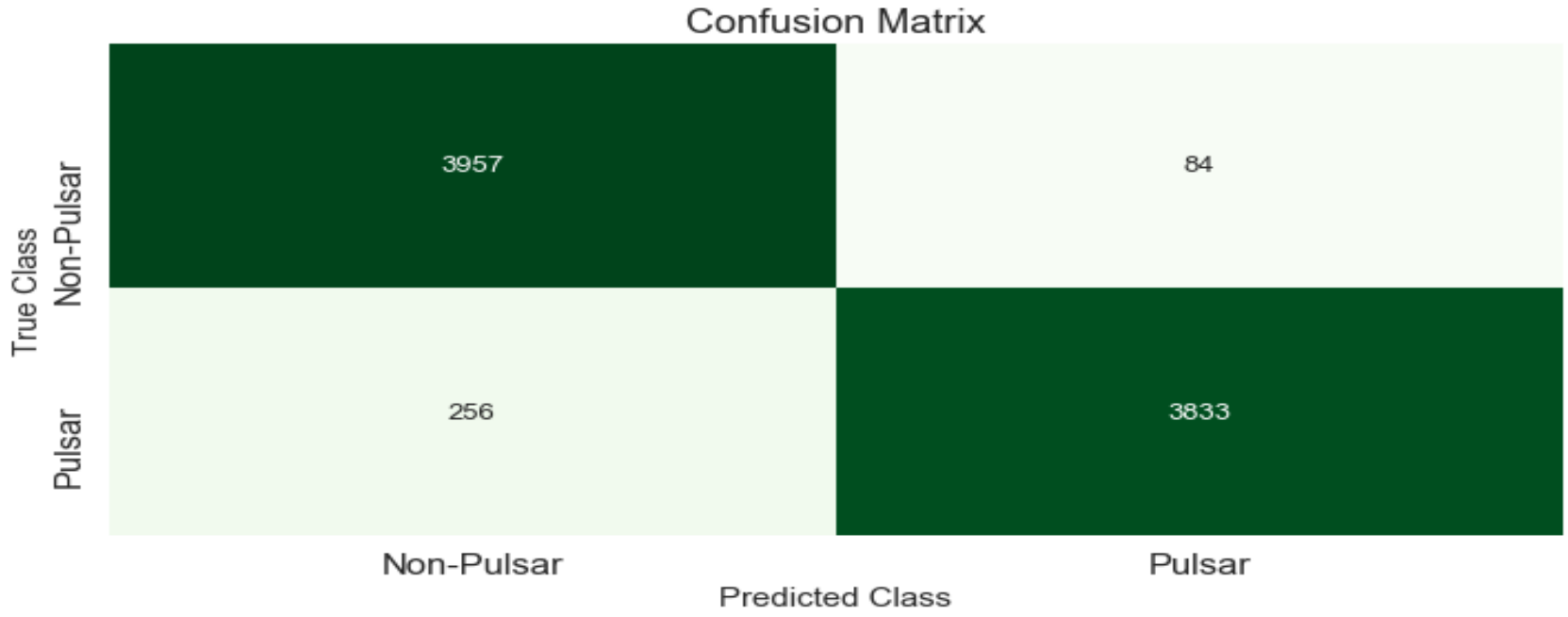
Machine Learning Models



Best Machine Learning Model

	precision	recall	f1-score	support
0	0.94	0.98	0.96	4041
1	0.98	0.94	0.96	4089
accuracy			0.96	8130
macro avg	0.96	0.96	0.96	8130
weighted avg	0.96	0.96	0.96	8130

```
conf_matrix(y_test, y_pred_gbt2)
```



FUTURE DIRECTION

- More Data
- More Observations per Average
- Investigate Overlap Region and Noise

Thank You