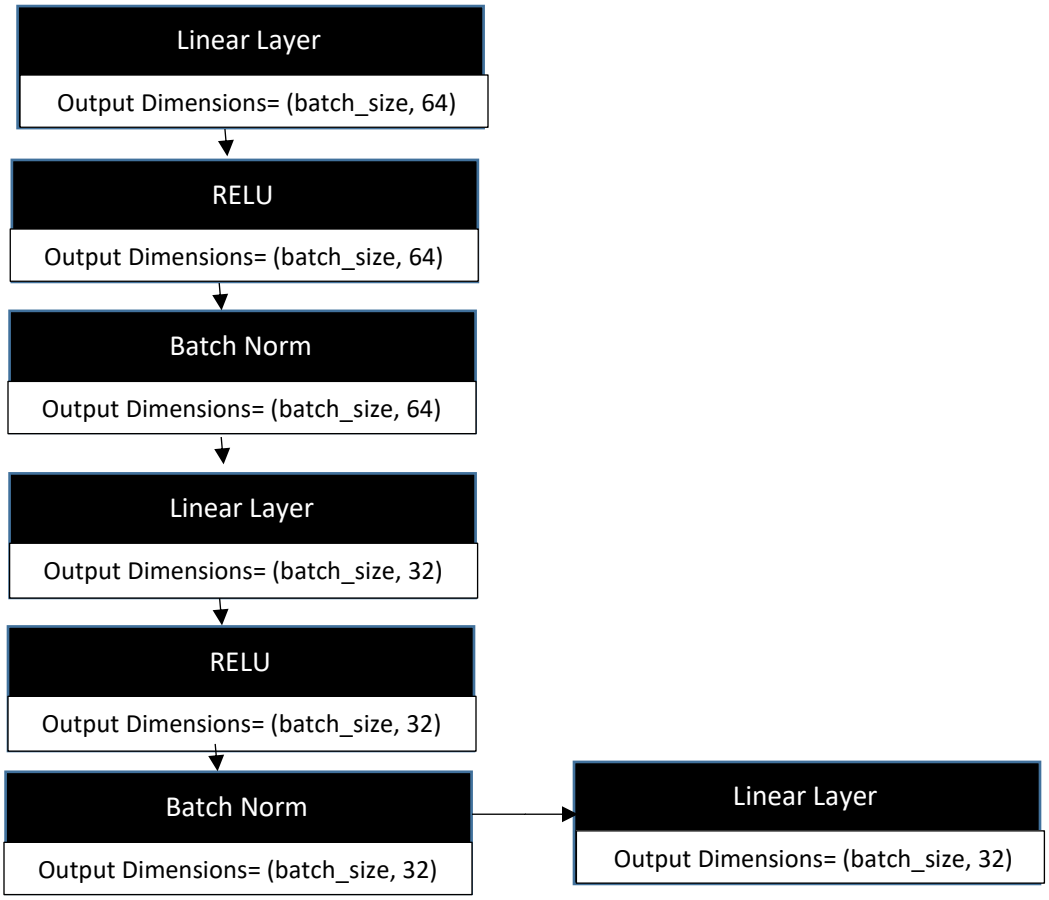
Dataset: credit card fraud detection dataset 2023 from Kaggle

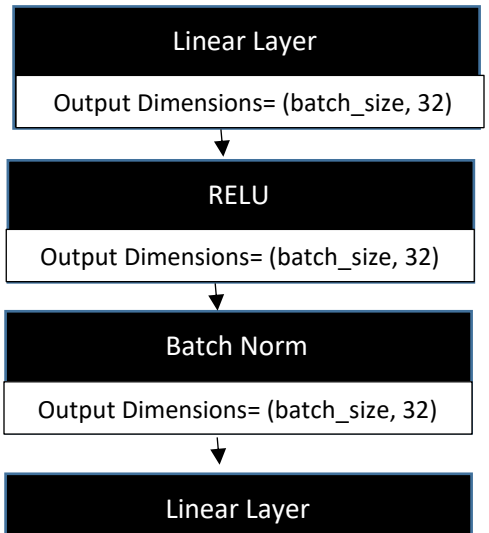
```
Number of Fraudulent Transactions: 284315
Number of Normal Transactions: 284315
```

Implemented encoder and decoder using linear layer, RELU to add non-linearity and batch normalization to stabilize the training.

Encoder:



Decoder:

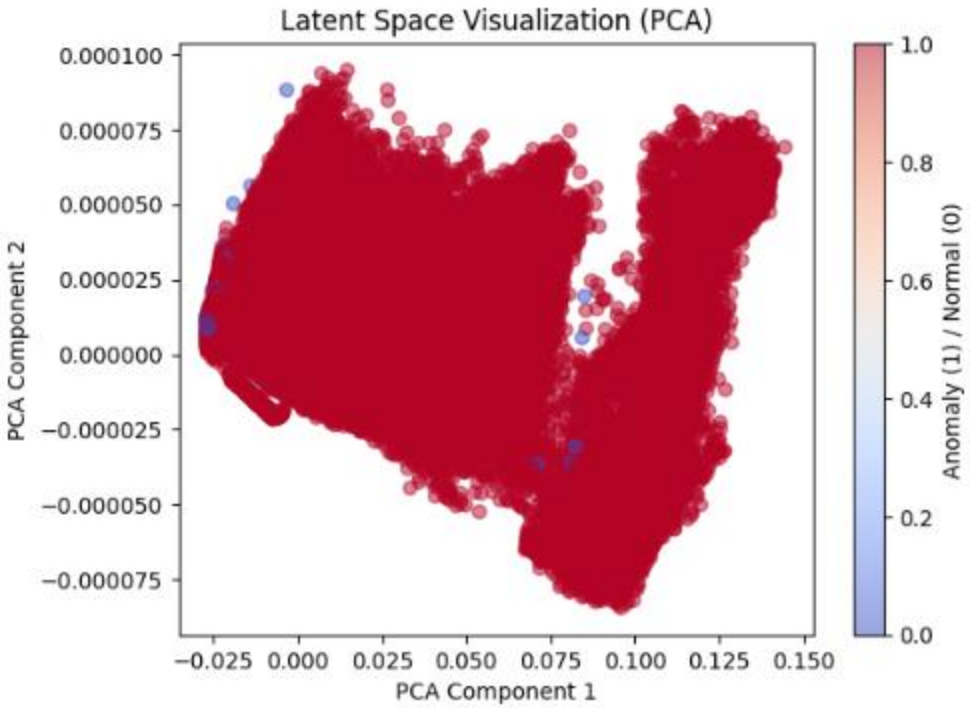


Evaluation:

```
Accuracy: 76.6922%, Precision: 0.8337, Recall: 0.6669, F1-score: 0.7410
```

Precision = Of all the instances the model predicted as anomalies, 83.37% were actually positive.
Recall = Out of all the actual positive cases, the model correctly identified 66.69% of them.
F1-score = F1-score of 0.7410 shows a balance between precision and recall, and the model is good at minimizing both false positives and false negatives.

Latent Space Visualization using PCA:



Since the normal data is separated from anomaly, the model is learning the normal and anomalous distributions.