



# Credit Card Fraud Detection

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# Introduction



Frauds committed using Credit Cards are increasing globally every year.



Credit card companies are trying to identify those credit card transactions so that customers are not charged for items that they did not purchase.

# What is Credit card Fraud?



Fraud or theft committed using or involving a payment card, such as a credit card or debit card.



Credit card fraud is also the unauthorized use of another person's credit card information

# Why is credit card Fraud Detection Important?



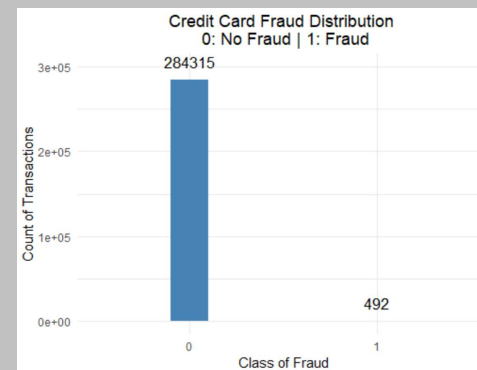
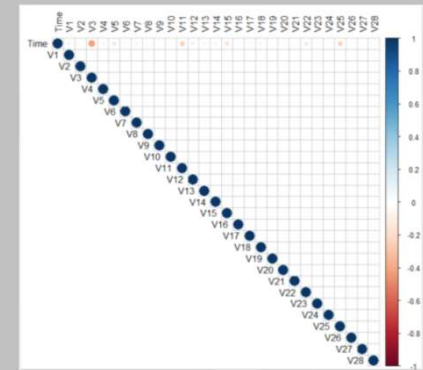
Although incidences of credit card fraud are limited to about 0.1% of all card transactions, they have resulted in huge financial losses.



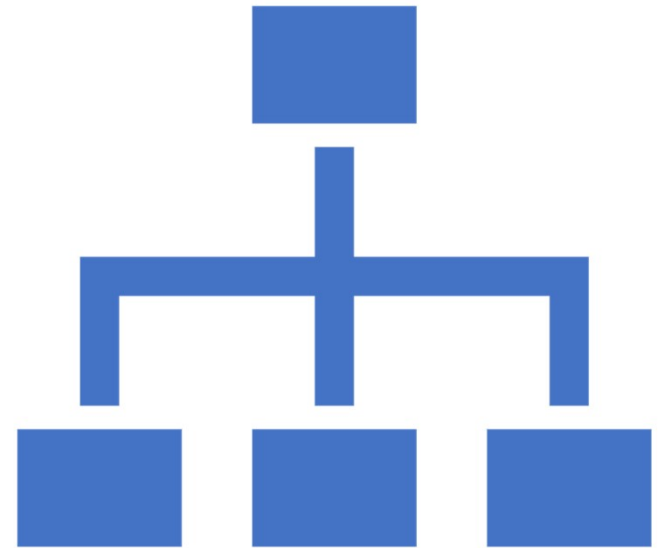
Nielsen Report estimates that in 2016, losses topped \$24.71 billion. That represents a 12% increase over the previous year.

# Exploratory Data Analysis

- 284K credit card transactions are present in the dataset.
- The Dataset is highly unbalanced with only 492 Fraudulent transactions accounting for only 0.172% of all the transactions in the dataset.
- There is no correlation between the variables.



# Classification Models



# Logistic Regression

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**Logit Confusion Matrix**

		Actual	
		0	1
Predicted	0	56856	34
	1	7	64

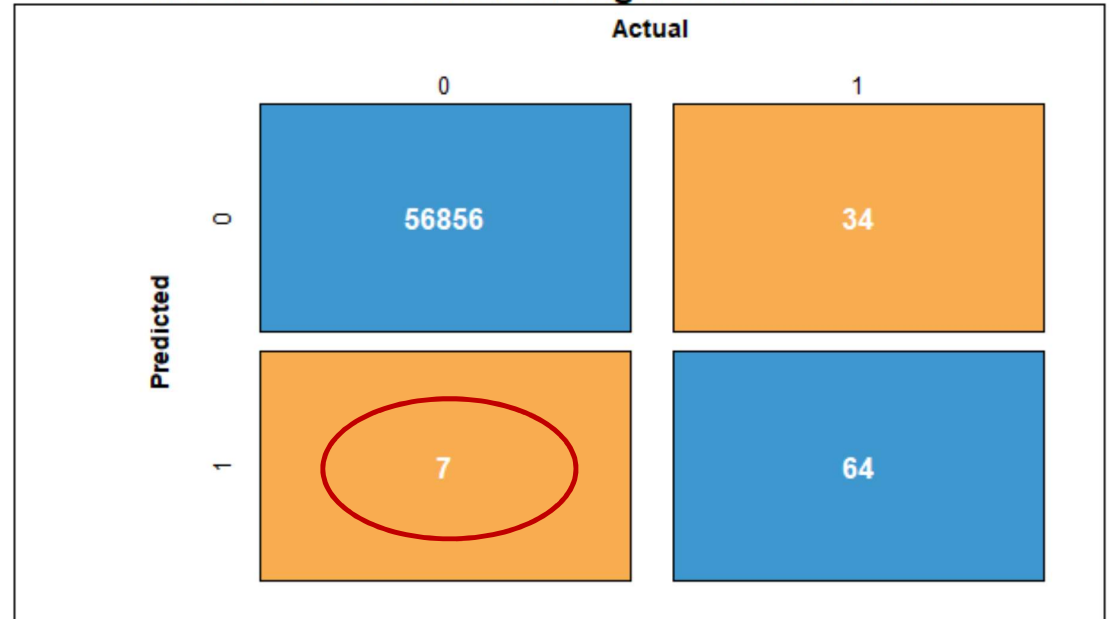
**DETAILS**

Sensitivity	Specificity	Precision	Recall	F1
1	0.653	0.999	1	1
Accuracy		Kappa		
0.999		0.757		

# K-Fold Cross Validated Logistic Regression

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**K-Fold Cross Validated Logit Confusion Matrix**



**DETAILS**

Sensitivity	Specificity	Precision	Recall	F1
1	0.653	0.999	1	1
Accuracy		Kappa		
0.999		0.757		



# Support Vector Machines

**SVM Model Confusion Matrix**

		Actual	
		0	1
Predicted	0	56861	54
	1	2	44

**DETAILS**

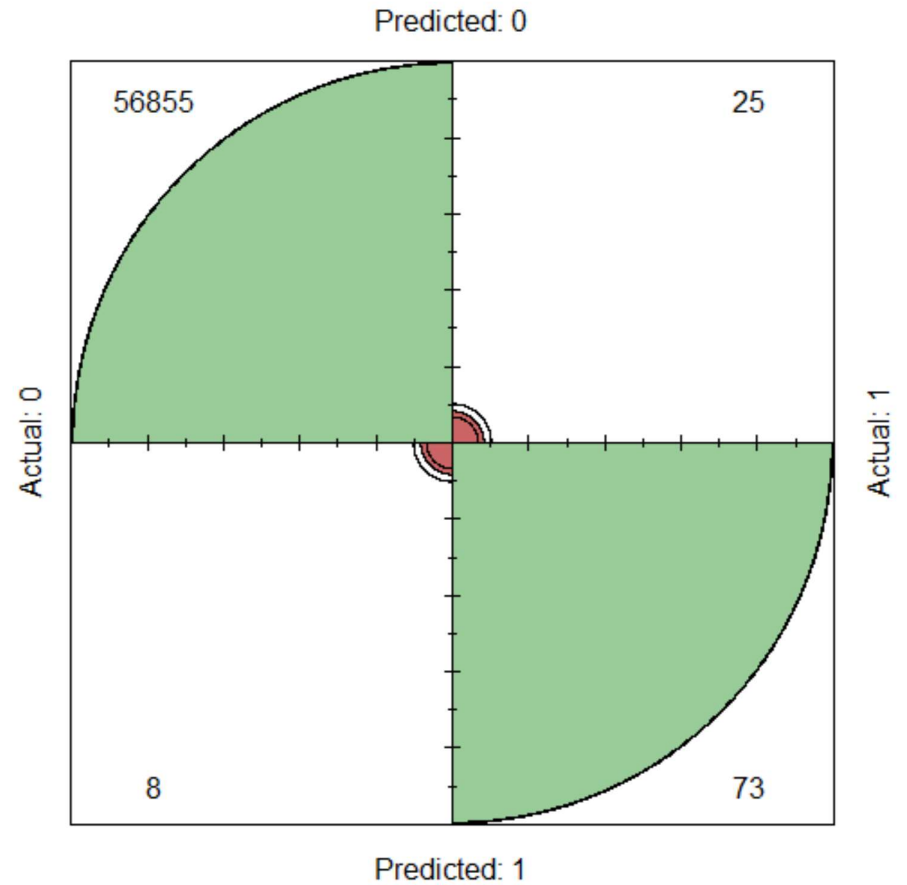
<b>Sensitivity</b>	<b>Specificity</b>	<b>Precision</b>	<b>Recall</b>	<b>F1</b>
1	0.449	0.999	1	1
<b>Accuracy</b>		<b>Kappa</b>		
0.999		0.611		

# Neural Network Architecture

# Neural Network

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Neural Network Confusion Matrix Plot



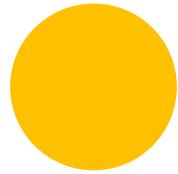
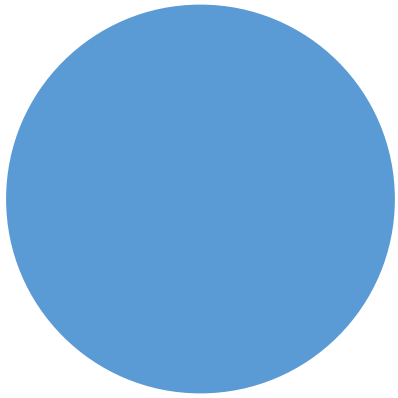
## Other Classification Models

Naïve Bayes Classification Model

Decision Trees

Random Forest

KNN Classification



Thank You

