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Fundamentals of Machine Learning

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Every year, millions of people have their identities, banking information and credit card details stolen. It doesn’t matter your gender, race or religious views. All that matters is that it will most likely happen to you in your lifetime. According to Credit Donkey in a study from July 2022, over the past five years, 47% of Americans have been a victim to credit card fraud. Think about this for a moment, almost half of all Americans, which is why it is so important to track the data and work toward bringing that number down.

The data collected is real-world information pulled from 2013 European credit card holders. The purpose of this data is so “credit card companies are able to recognize fraudulent credit card transactions so that customers are not charged for items that they did not purchase.” (Kaggle)

First, we need to decide what we would like to conclude using this information:

1. How many transactions are fraudulent yearly?
2. How to bring the amount of fraudulent transactions down? (Why we are meeting here today)

Due to the confidentiality issues associated with the data, the columns are listed as V1-V28. One thing the data does not need to hide is the amount of transactions and how many of these were fraudulent in 2013.

After running the two following lines we were able to conclude out of the 284,807 total transactions, 492 were fraudulent:

length(creditcard$Class)

summary(as.factor(creditcard$Class))

Within the R Markdown file you find on the Github, you will find many charts and training data to help us delve further into the data. What we would like to get a grasp on today is if the .172% fraudulent transactions were within our allowed margin and how to bring this number down in the future. With this information now being known, the question for you is how can we bring this amount down? None of our card holders deserve to have their lives stalled because we allowed a fraudulent charge to go through and had to cancel their purchases.

Sources:

<https://github.com/cmeister2012/64060_-cmeiste5>

<https://www.creditdonkey.com/credit-card-fraud-statistics.html>

<https://www.kaggle.com/datasets/mlg-ulb/creditcardfraud?resource=download>