

# Project Loan Prediction

## Why?

There is a great need for banks to know if a customer will accept in the future a loan.

Akis Gazepidis Data Scientist

# Project's pipeline

## Model Training

Deep Learning, Adam  
optimizer

## Model Explainability

shap values,  
Summary plot

01 ——— 02 ——— 03 ——— 04

## Data pre-processing

Fix skewness, scale  
data, balance data

## Model Metrics

Accuracy score,  
Confusion Matrix,

# Data pre-processing

## Accepts Loan

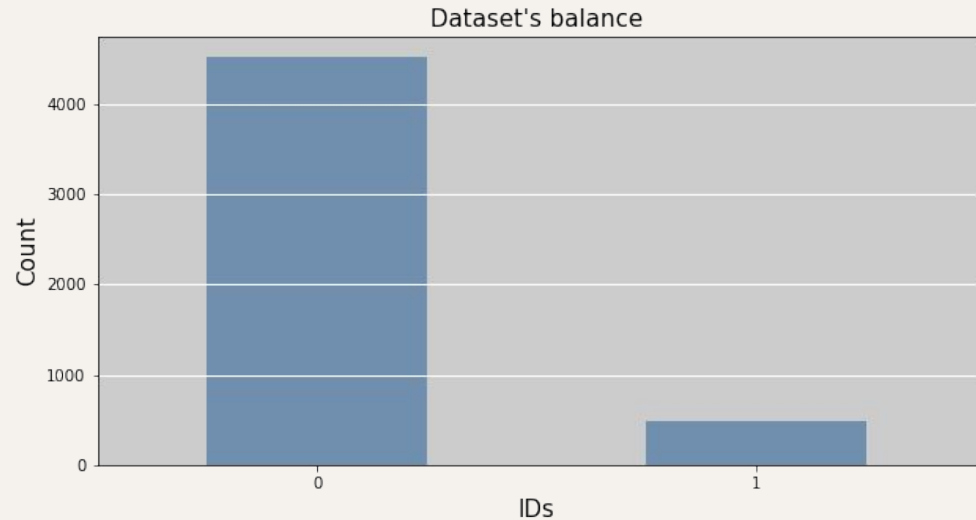
Value 1 indicates that customer accepted the loan offer.

## Declines Loan

Value 0 indicates that customer declined the loan offer.

## Features

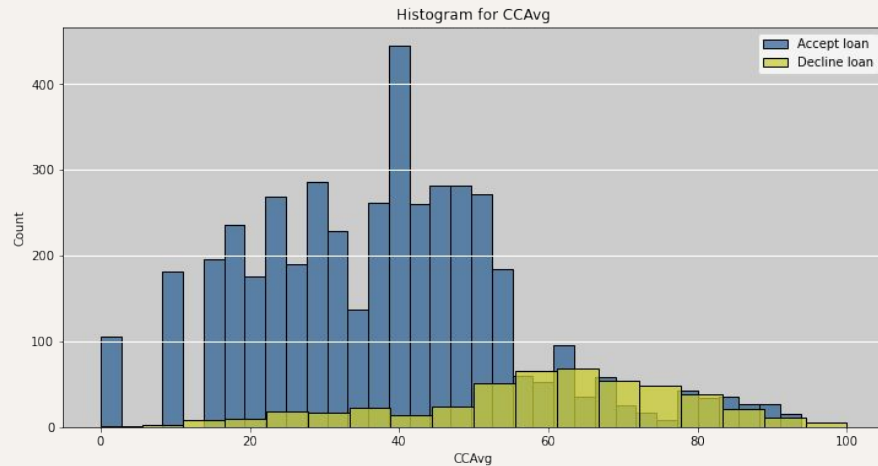
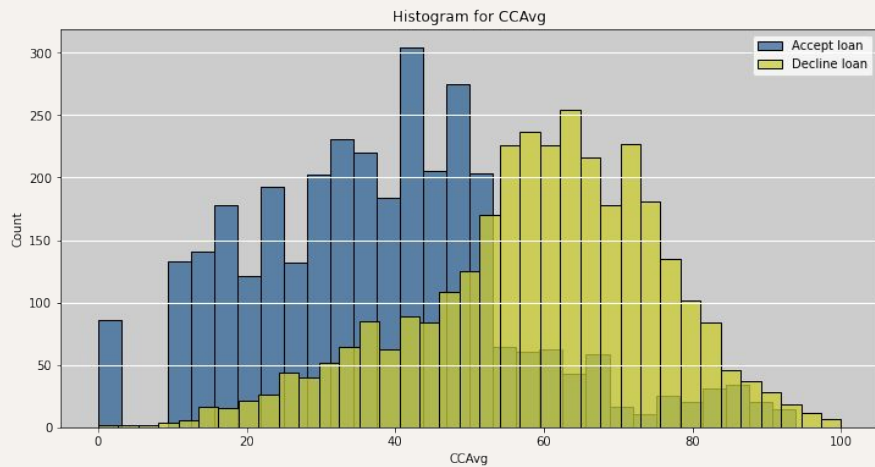
E.g Age, Professional  
Experience, Income, Family size,  
Credit cards average spending



# Data pre-processing

## Oversampling

Adasyn  
oversampler



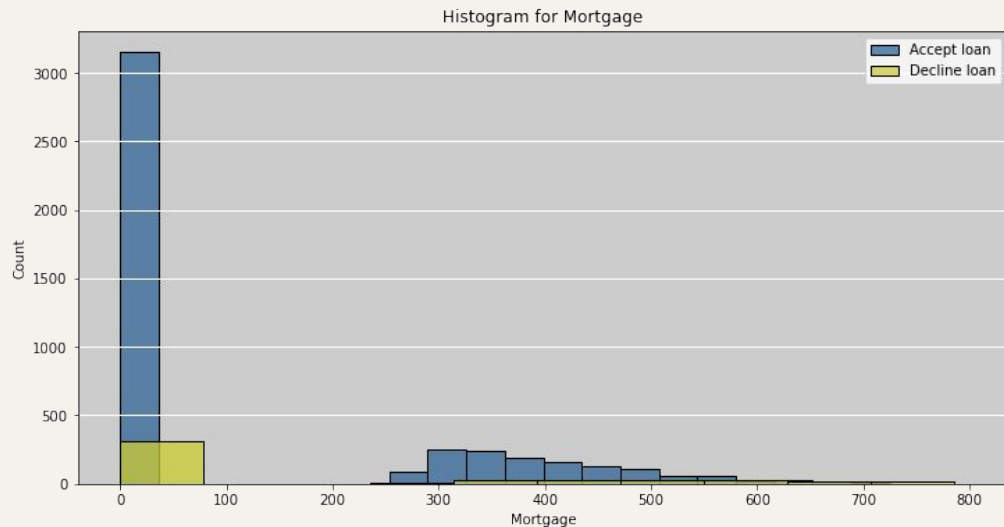
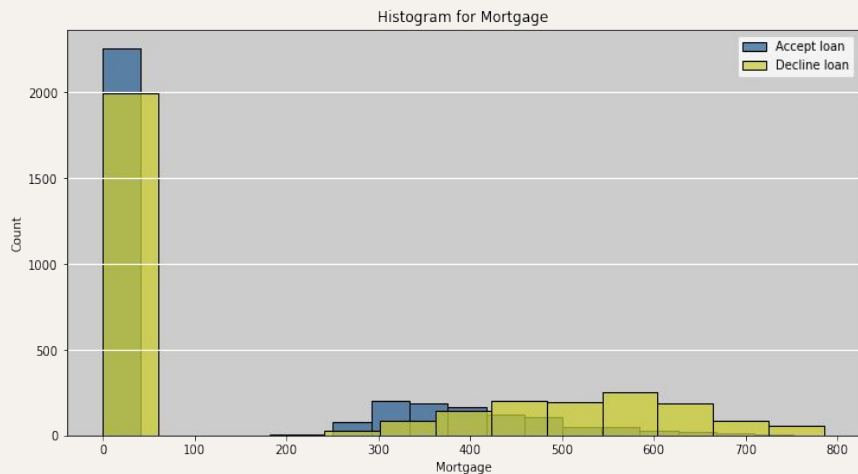
## Skewness

Square root of the  
data

# Data pre-processing

## Oversampling

Adasyn  
oversampler



## Skewness

Square root of the  
data

# Model Training

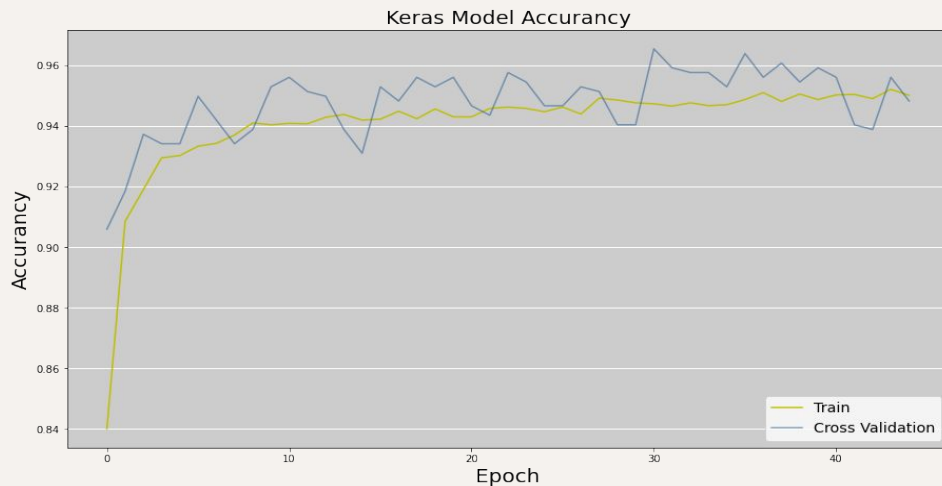
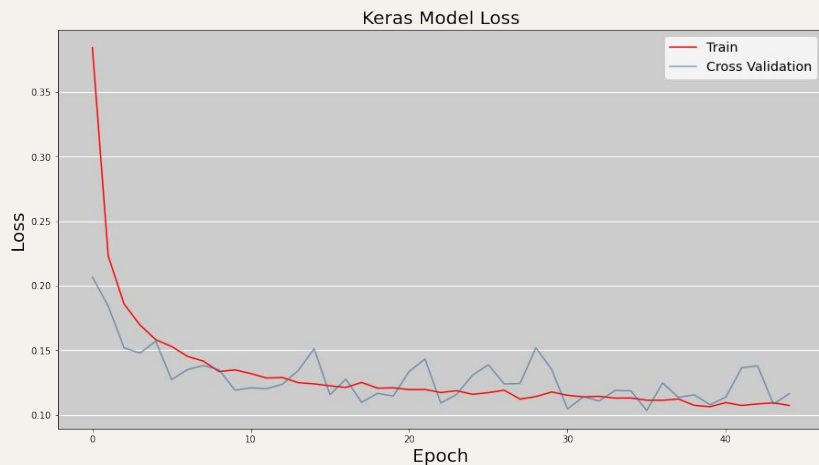
	Val_loss	Val_accura	epoch
43	0.137960	0.938872	43
44	0.108417	0.956113	44
45	0.116394	0.948276	45

# Model Training

**Layers:** 3

**Activation F:** Relu, Sigmoid

**Neurons:** 193

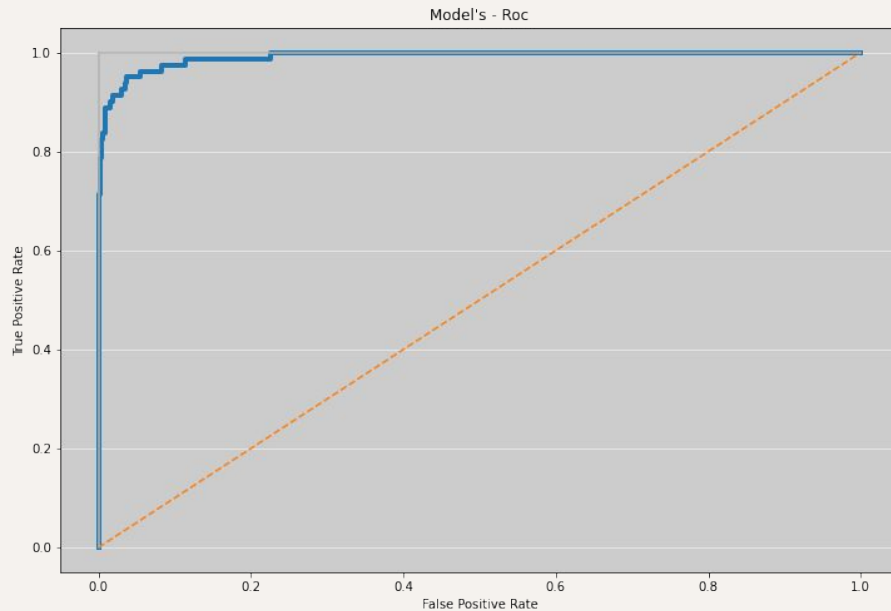
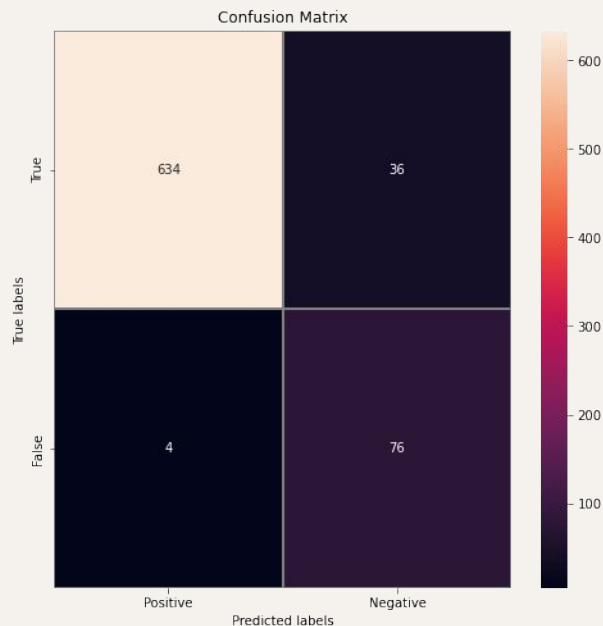


**Loss function:** Binary Cross Entropy

**Metric:** Accuracy score

**Total params:** 9.281

# Model Metrics



Test Data:      Loss 0.114189      Accuracy 0.9466

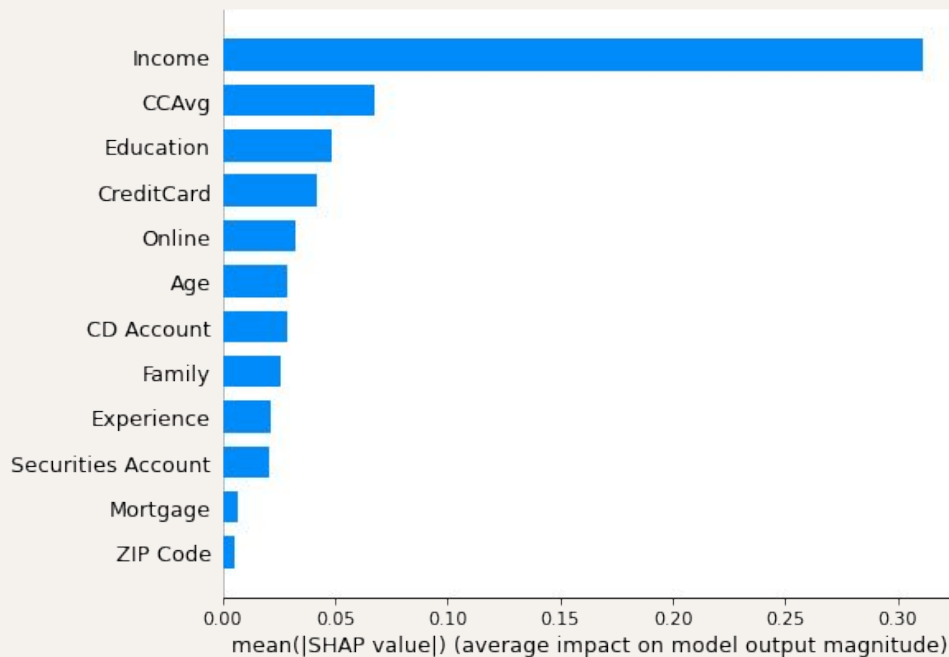
Roc auc score:      0.991548



# Model Explainability

**Best Features: Income, CCAvg**

## Feature's impact on output



# Thanks

Do you have any questions?

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