Loan Classifier

ML course
Final Project

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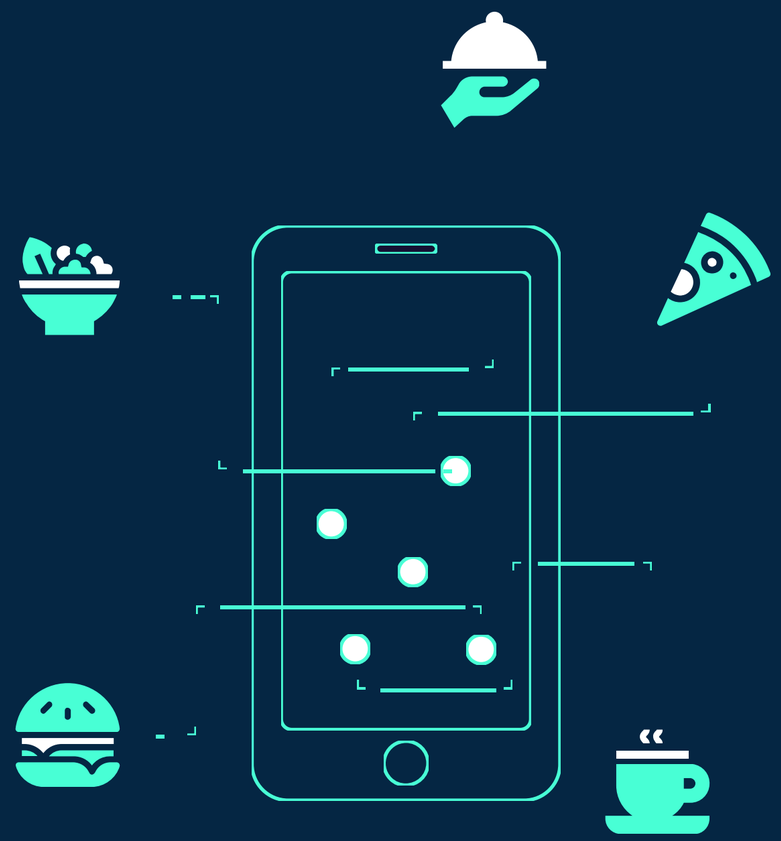
models comparison and conclusion



ABOUT THE PROJECT

For the final project, I chose to build a classifier model for new loan requests. I chose this topic because back in 2015, one of my co-workers built a "lead-scoring" model, which gives "grades" to potential new customers, and first phone calls would be made based on the calculated "grade." This model showed significant improvement of lead conversion and sales. I was always curious how he used historical data to create this model on a simple Excel spreadsheet. Thanks to this course, I learned about ML and the power it gives to get insights from the data

Data source and materials used:

- Kaggle was used to find data for the project
- Class work opynb and materials from classroom

EDA

Libraries used

Initial data analytics

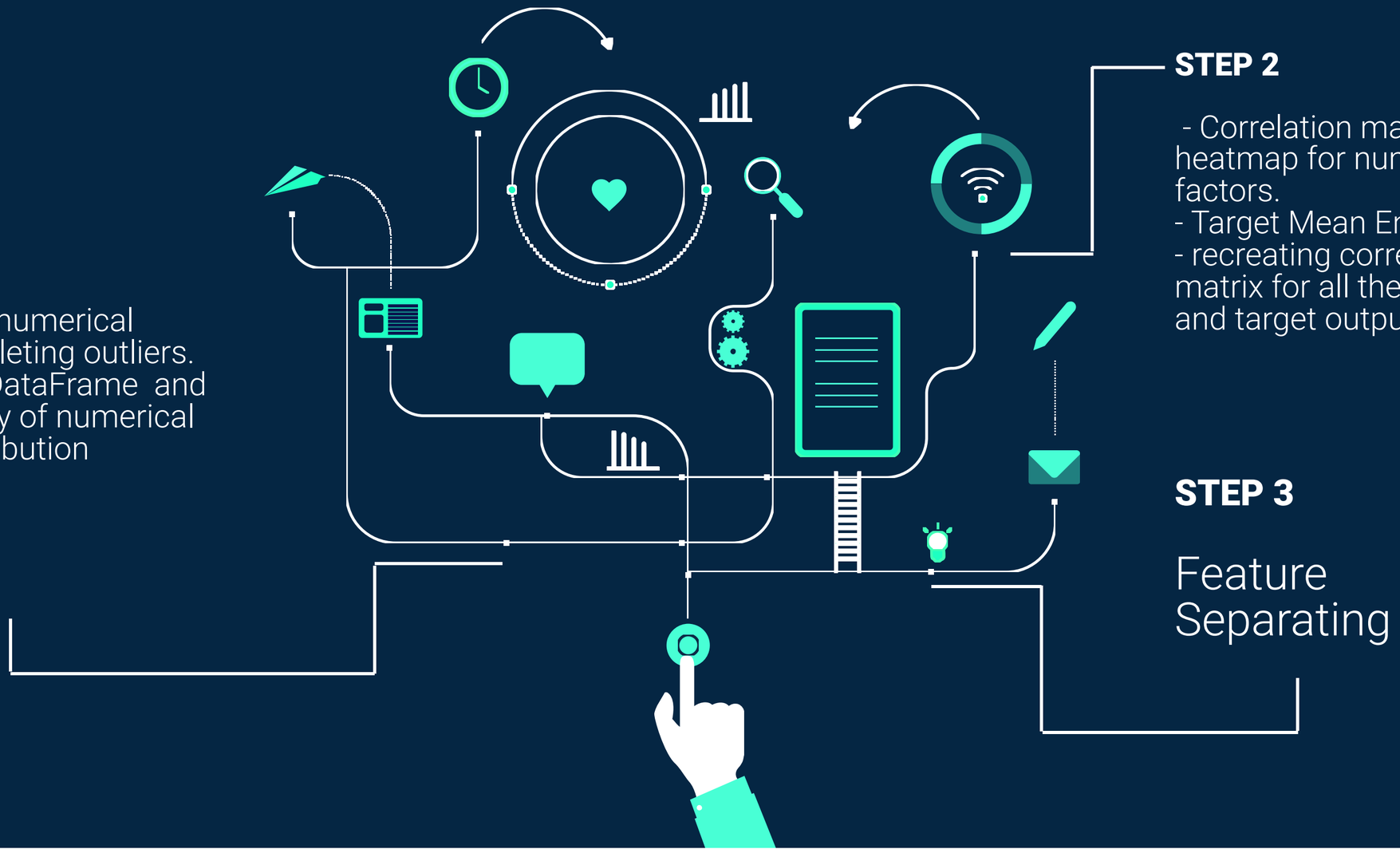
Visual analyses of some factors

NumPy
Pandas
matplotlib.pyplot
seaborn
sklearn.preprocessing
sklearn.model_selection
sklearn.linear_model
sklearn.metrics
sklearn.datasets
sklearn.ensemble
catboost
sklearn.neighbors

Preprocessing

STEP 1

Analyses of numerical columns. Deleting outliers. Recreating DataFrame and visual display of numerical factors distribution

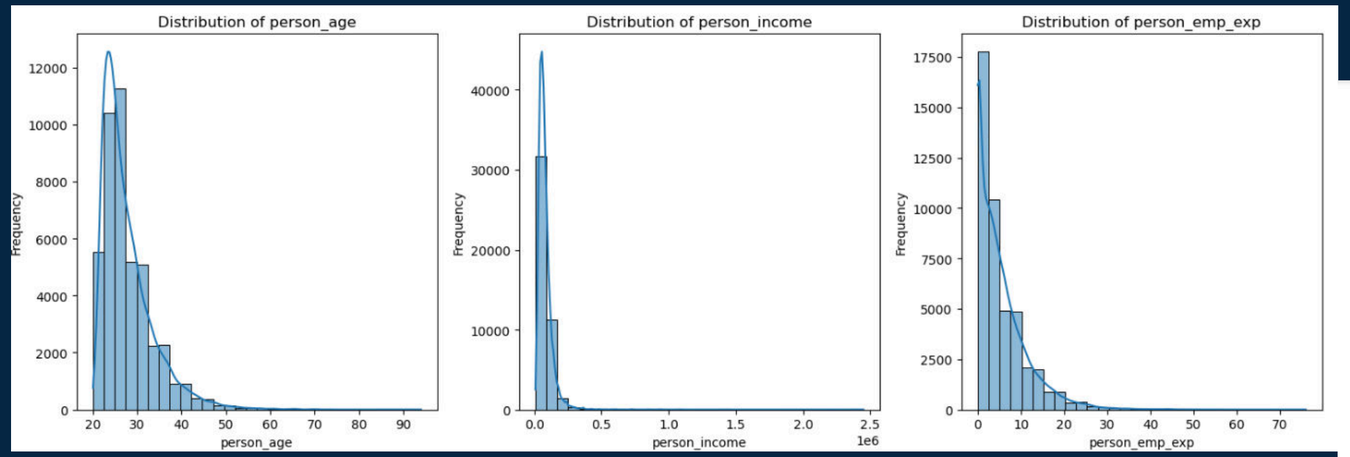


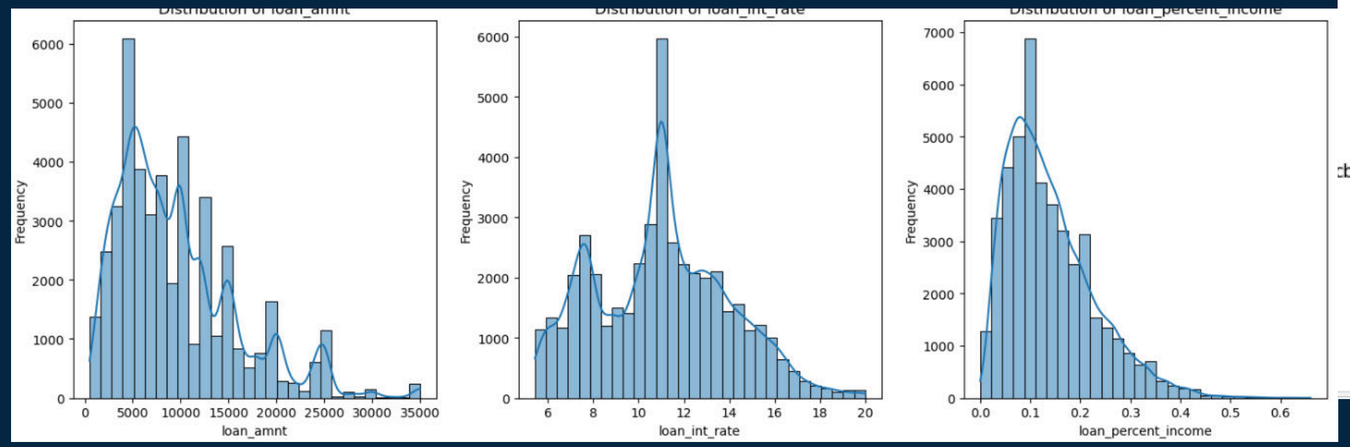
STEP 2

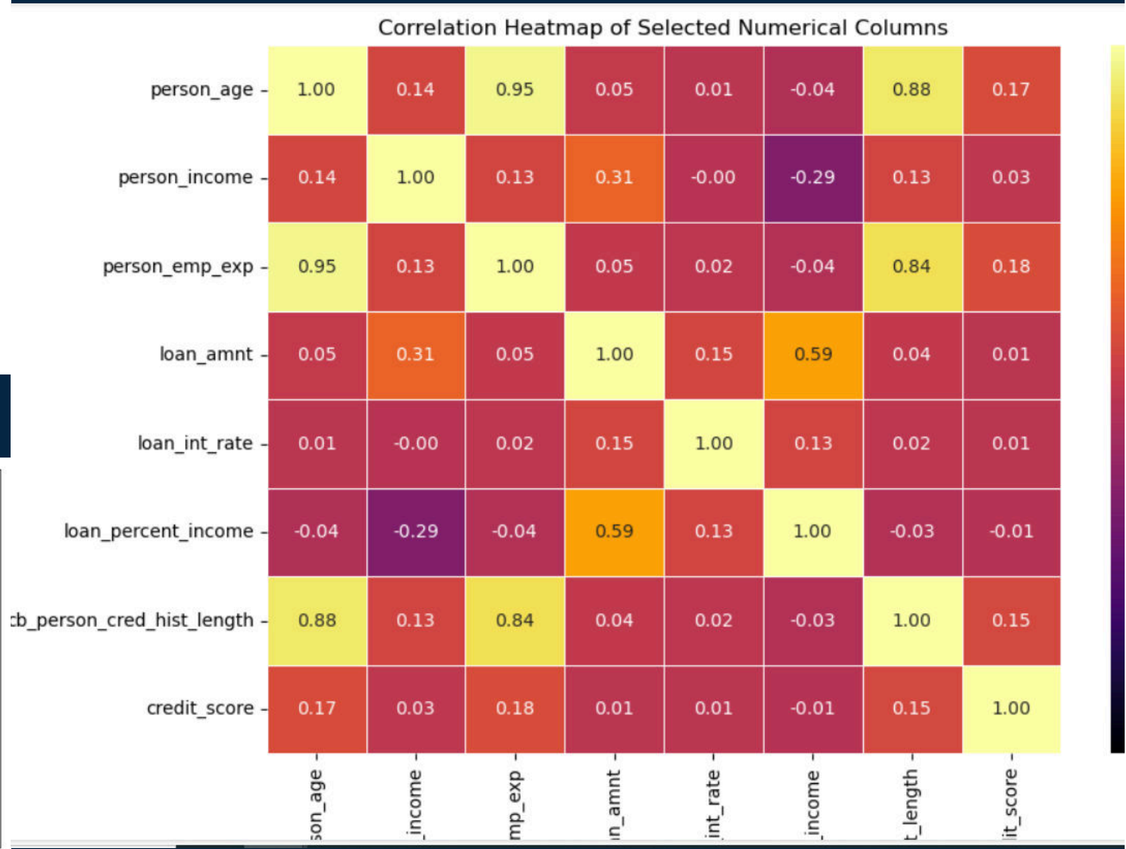
- Correlation matrix and heatmap for numerical factors.
- Target Mean Encoding
- recreating correlation matrix for all the factors and target output

STEP 3

Feature Separating


Distribution of person_age
Frequency
person_age
Distribution of person_income
Frequency
person_income
1e6
Distribution of person_emp_exp
Frequency
person_emp_exp


Frequency
loan_amnt
Frequency
loan_int_rate
Frequency
loan_percent_income


Correlation Heatmap of Selected Numerical Columns
person_age
person_income
person_emp_exp
loan_amnt
loan_int_rate
loan_percent_income
cb_person_cred_hist_length
credit_score
1.00 0.14 0.95 0.05 0.01 -0.04 0.88 0.17
0.14 1.00 0.13 0.31 -0.00 -0.29 0.13 0.03
0.95 0.13 1.00 0.05 0.02 -0.04 0.84 0.18
0.05 0.31 0.05 1.00 0.15 0.59 0.04 0.01
0.01 -0.00 0.02 0.15 1.00 0.13 0.02 0.01
-0.04 -0.29 -0.04 0.59 0.13 1.00 -0.03 -0.01
0.88 0.13 0.84 0.04 0.02 -0.03 1.00 0.15
0.17 0.03 0.18 0.01 0.01 -0.01 0.15 1.00

Models

- Logistics Regression
- Random Forest
- Catboost
- KNN

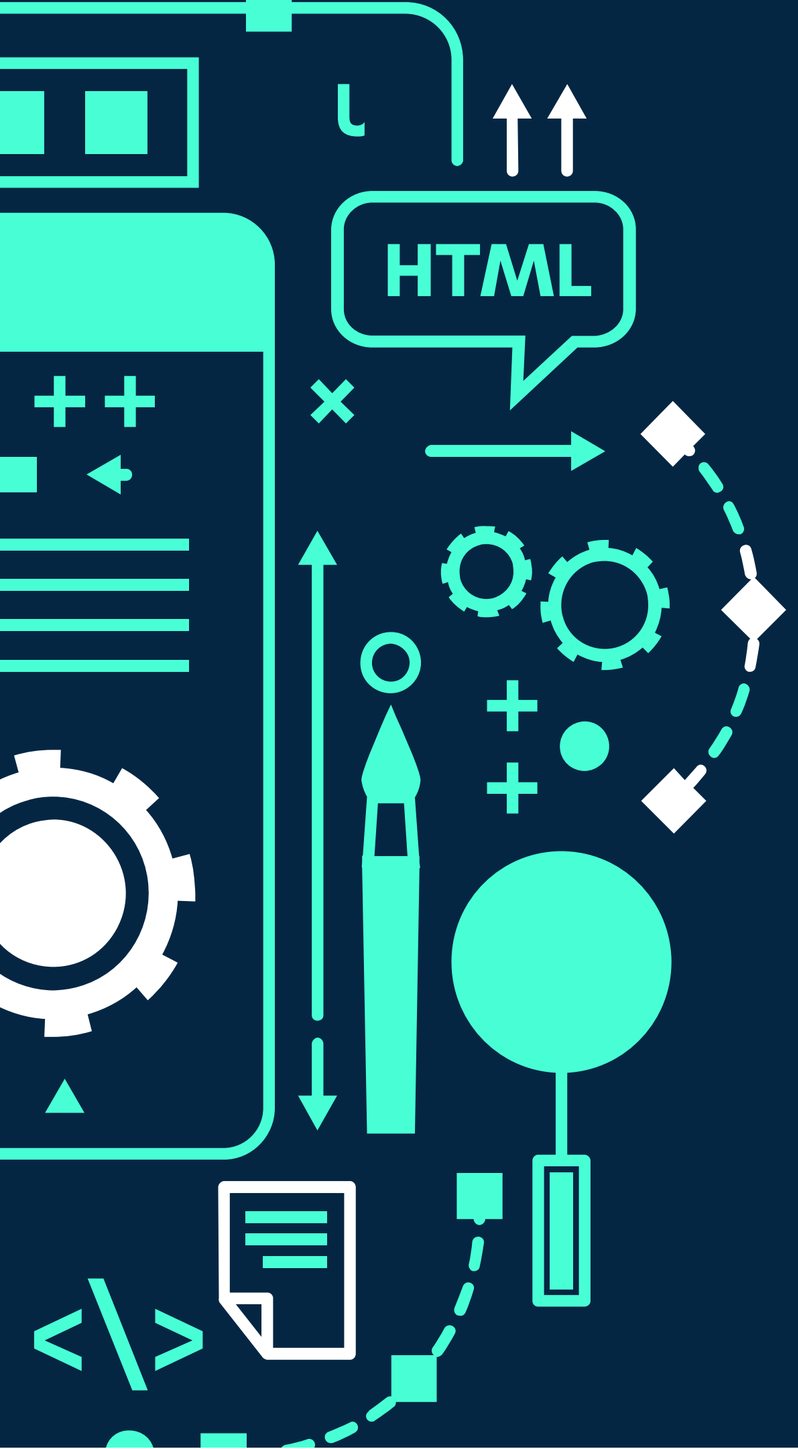
Conclution

]:

	Model	Accuracy
1	Random Forest	93.088121
2	Gradient Boost	90.187799
3	K Neighbors	90.187799
0	Logistic Regression	88.976553

All the models have an accuracy of 88% and higher

Random forest is the best model for out project with an accuracy of 93%



THANKS!