UNIVERSITÉ CÔTE D'AZUR

MSc. Data Science & Artificial Intelligence

Introduction to Machine Learning

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Final project: Petfinder

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1 Problem description

The problem we are trying to solve consists of predicting whether an animal will be adopted from a shelter within 30 days, given several pieces of information on this animal. This problem is a clean and reduced version of a Kaggle competition dating back from 2019.

2 Exploratory Data Analysis

We would like to get some basic information of the data set before diving into the machine learning solution.
The training set has shape (8168×16) and the test set has shape (250×16), where the column names and data types are summarized in Table 1.

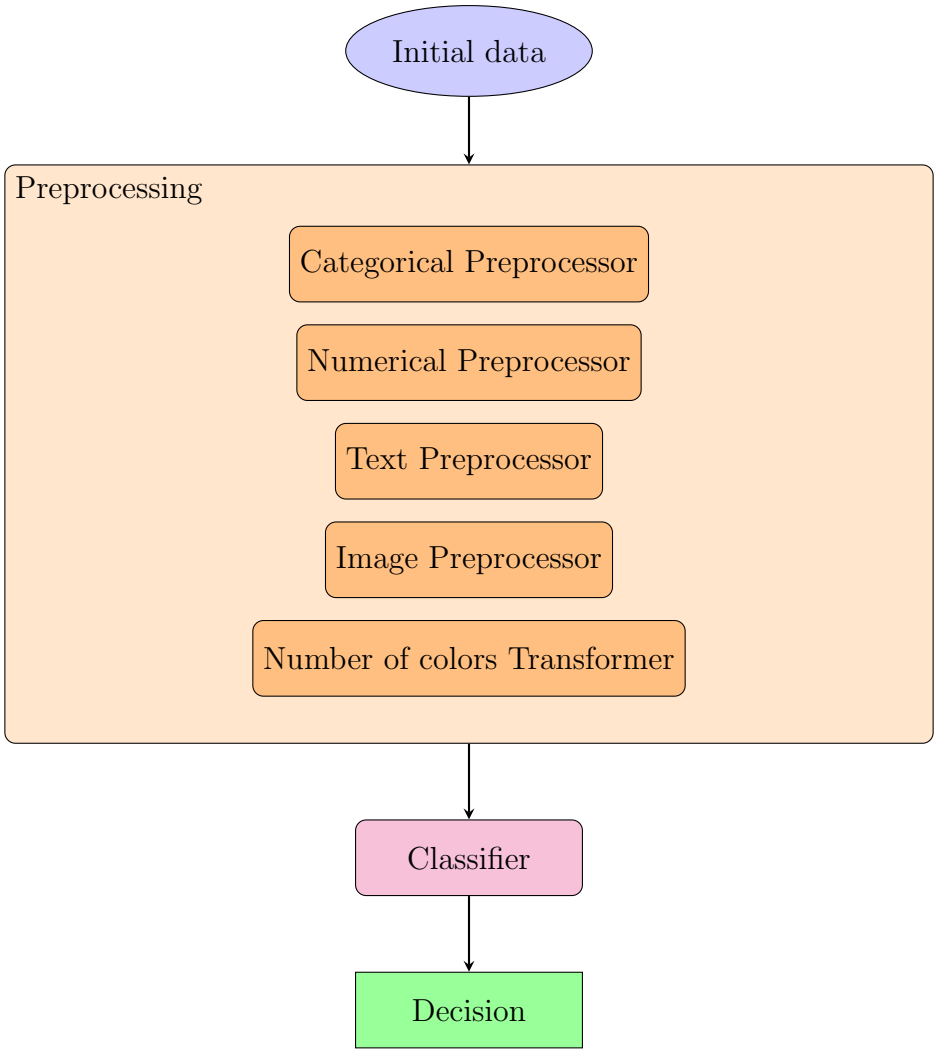
CATEGORICAL		NUMERICAL	TEXT	IMAGE
Type	MaturitySize	Age	Description	Images
Gender	FurLength	Fee		
Breed	Vaccinated			
Color1	Dewormed			
Color2	Sterilized			
Color3	Health			

Table 1: Data types per column

Overall, the data set is very clean as it contains 0 NaN values.

3 Solution

The solution consists of a pipeline of the following structure:



Classifier	**Accuracy**
GradientBoostingClassifier	0.629
RandomForestClassifier	0.623
AdaBoostClassifier	0.612
MLPClassifier	0.602
BernoulliNB	0.600
GaussianNB	0.567
DecisionTreeClassifier	0.559
SVC	0.529
KNeighborsClassifier	0.520
GaussianProcessClassifier	0.509
SGDClassifier	0.509

Table 2: Accuracies of first prospect

We did not test XGBoost because is too slow.

4 Evaluation & critical view