May 15, 2022

Assignment 1
Business Process Intelligence

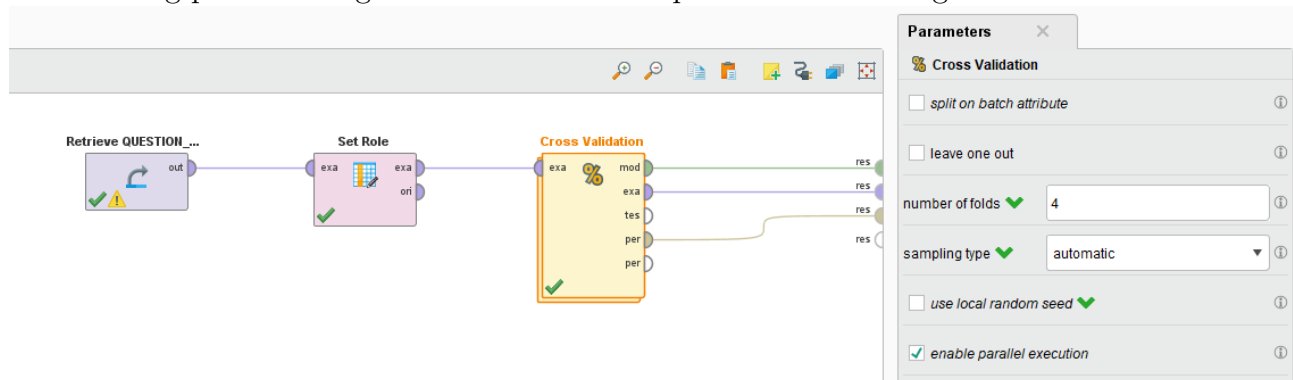Marc Ludevid-Wulf
Til Mohr
Simon Michau

Question 1

Question 2

(a)

After importing the situation table from Celonis into RapidMiner we can design the decision tree learning process using the cross validation operator after setting the class variable:

We construct the training section of the cross validation using the decision tree operator in RapidMiner and also specifying the given parameters. In the testing section we simply apply the current test set to the given model and run a performance check upon it.
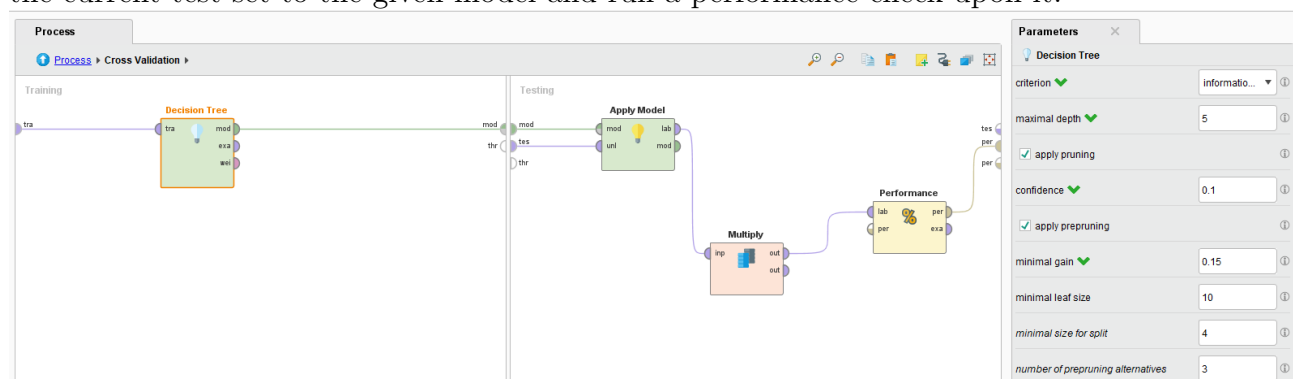
This process results in the following decision tree:

Here we can see that for all applications, where the applicants last credit score was above 297, the application was successfully completed.

We can also observe, that the very few applicants for new credits, those credit scores dropped significantly (First Credit Score > 329 and Last Credit Score $\leq$ 297) within a time less or equal to 30.349 days, all completed their application successfully.

Using the cross validation operator, we could also observe the following performance metrics:

⦿ Table View ○ Plot View

accuracy: 90.16% +/- 0.80% (micro average: 90.16%)

	true Successful completion	true Denied by the bank	true Cancelled by client	class precision
pred. Successful completion	2600	40	30	97.38%
pred. Denied by the bank	23	524	296	62.16%
pred. Cancelled by client	35	66	1368	93.12%
class recall	97.82%	83.17%	80.76%	

(b)

1. Most applicants with a last credit score of at most 297 cancelled their own application when it was already roughly over a month's time in progress. Perhaps the current application process needs to be revised to minimize throughput times.

2. 62% of applications, that was roughly under a months time in progress, by applicants with a last credit score of at most 297 for a new credit were rejected by the bank, if their first credit score was at most 328. If the bank seeks for more successful application completions, perhaps they should adjust their rejection criteria.

Question 3

(a)

(b)

Question 4

(a)

(b)

Question 5

(a)

(b)

(c)

(d)