24th June 2023

Cart – includes cart.method = “LATENT-BUDGET-TREE”

The creates a tree using latent budgets, utilising the rpy2 library and lba function in R. Assessing returned alpha values greater than 0.5 and assigning the corresponding class to the left split.

Please note for the creation of the class element, an impurity function is still passed, such as gini, and is used during display only.

Also latent budget tree is only available for classifier problems

This takes the max\_k (complete) top tau predictors to assess. Complete as in no error is returned from the lba function: such as inversing non square matricies. This max\_k parameter can be passed to the cart.growing\_tree() function.

I am confident in the tau calculations comparing with R GKtau library.

Also the cart.print\_tree() function has been updated to include the percentages of all the classes in the nodes, to see how it goes. The cart.print\_tree() also takes hyperparameter table = True to return a pandas dataframe of the information about the tree. This includes the alpha and beta parameters from the split but is a bit messy. Please not this table is only available for latent budget tree at this time.

Also the print\_tree() function takes html as a parameter that will open the graph in your browser and create a html object in your directory. This was because in jupyter the graphs could be a bit small and hard to distinguish, especially with increasing depth.

A quite weird thing, is as it is a classifier problem all observations are strings / objects for the predictors and that if using pandas, for importing the data frame both training and test tests will need to have index’s starting at 0

I have included my play dataset, which is Christians, and is the transport dataset and is attached.