

## TECHNICAL REPORT

### Documentation

Instructions for running python file:

1. Download PyCharm software  
(link: <https://www.jetbrains.com/pycharm/download/#section=windows>) and launch it
2. Make recommended settings
3. Open folder with source code and data files in PyCharm
4. Open terminal tab from opened folder
5. In the command prompt run the following command: `python oneRule.py filename.txt`

### Time complexity

*Learning part:* According to Big O notation, complexity of order for training part of the code is  $O(mn)$ , where  $m$  is the number of features, and  $n$  is the number of instances. At the beginning data is read from the given AISpace files and added to new created dataframe, where it is needed to go through all the elements, i.e. operation on each element. In order to choose the best predictor it is needed to go through all the existing values, therefore the complexity for this function is  $O(mn)$ .

*Testing part:* Complexity of order for testing part of the code is  $O(n)$ , where  $n$  is the number of instances, since the code goes through only one selected predictor rather than all features.

### Memory usage

*Learning part:* Space complexity for the training part is  $O(mn)$ , where  $m$  is the number of features, and  $n$  is the number of instances, which represents Quadratic Time complexity type (the time it takes to complete a function increase like a quadratic function), since created a dictionary which takes extra space required depends on the number of items stored in the dictionary.

*Testing part:* Space complexity for the testing part is  $O(mn)$ , where  $m$  is the number of features, and  $n$  is the number of instances as testing part uses previously implemented dictionary.