Experiment-3.3

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Semester: 01
Date of Performance: 06/11/2023
Subject Name: Artificial Intelligence Lab
Subject Code: 23CSH-621

Aim of the Experiment :

Aim of the Experiment is to use Experimenter in the Weka Tool, analyze the results of K fold testing on UCI ML Repository dataset for different folds of cross validation technique. Compare the stability of the algorithm graphically.

Objective of the Experiment :

Task to be done for this experiment is that we have to perform following tasks:

a) Analyze the results of K fold testing for different folds of cross validation technique.

b) Compare the stability of the algorithm graphically.

Algorithm/ Steps for Experiment :

Step 1: Download the **Kidnapping dataset** from the Kaggle website.

Step 2: Open the WEKA Tool and open the **'Explorer'** tab.

Home | kidnapping.csv

Menu | Home | Insert | Page Layout | Formulas | Data | Review | View | Tools

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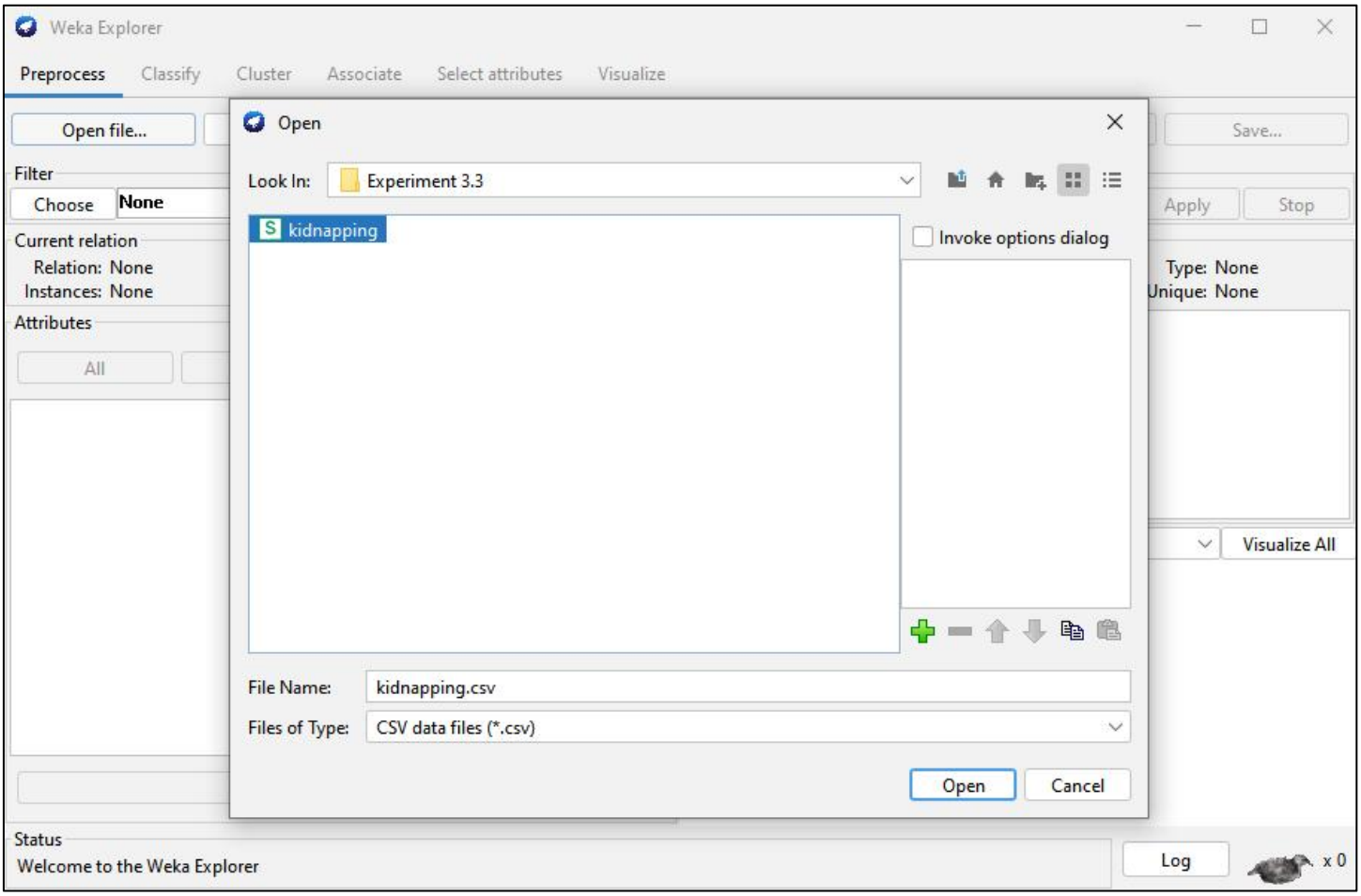
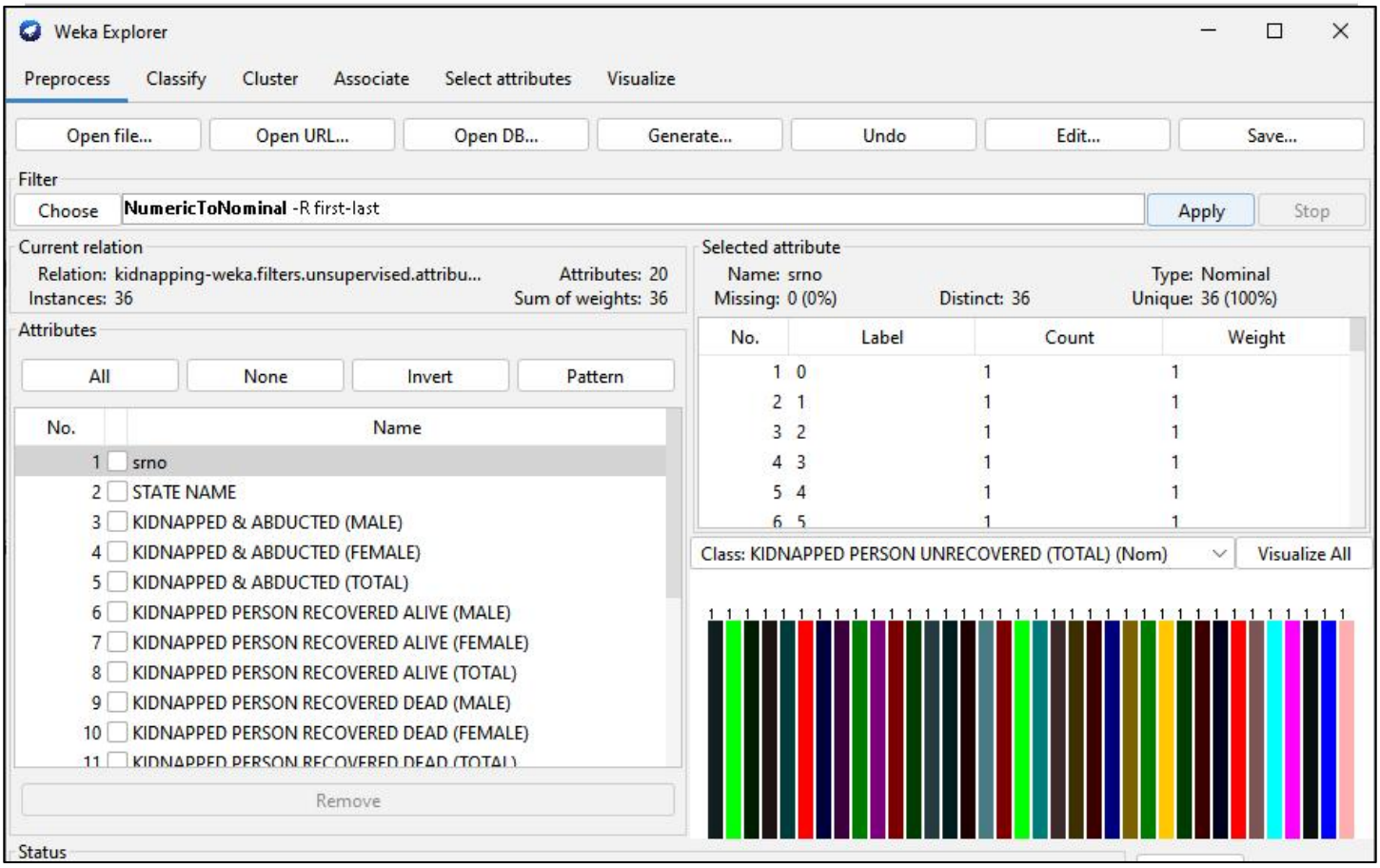
2	0	ANDHRA PF	628	1483	2111	83	248	331	0	0	0	83
3	1	ARUNACHA	37	109	146	27	68	95	0	0	0	27
4	2	ASSAM	3230	16311	19541	60	189	249	0	0	0	60
5	3	BIHAR	3643	9163	12806	675	2261	2936	10	0	10	685
6	4	CHHATTISG	977	2253	3230	548	1041	1589	11	1	12	559
7	5	GOA	60	93	153	44	68	112	2	0	2	46
8	6	GUJARAT	812	3447	4259	652	2442	3094	1	2	3	653
9	7	HARYANA	2513	4744	7257	1131	2323	3454	5	3	8	1136
10	8	HIMACHAL	171	359	530	88	210	298	5	1	6	93
11	9	JAMMU & K	130	1502	1632	40	944	984	1	1	2	41
12	10	JHARKHANI	780	909	1689	506	385	891	11	0	11	517
13	11	KARNATAK	1335	3151	4486	749	1576	2325	5	0	5	754
14	12	KERALA	107	260	367	79	203	282	0	0	0	79
15	13	MADHYA PI	4815	11294	16109	2388	4707	7095	15	13	28	2403

Step 3: Click on the **'Open file'** Option >> Select Kidnapping dataset >> Click on **Open**.



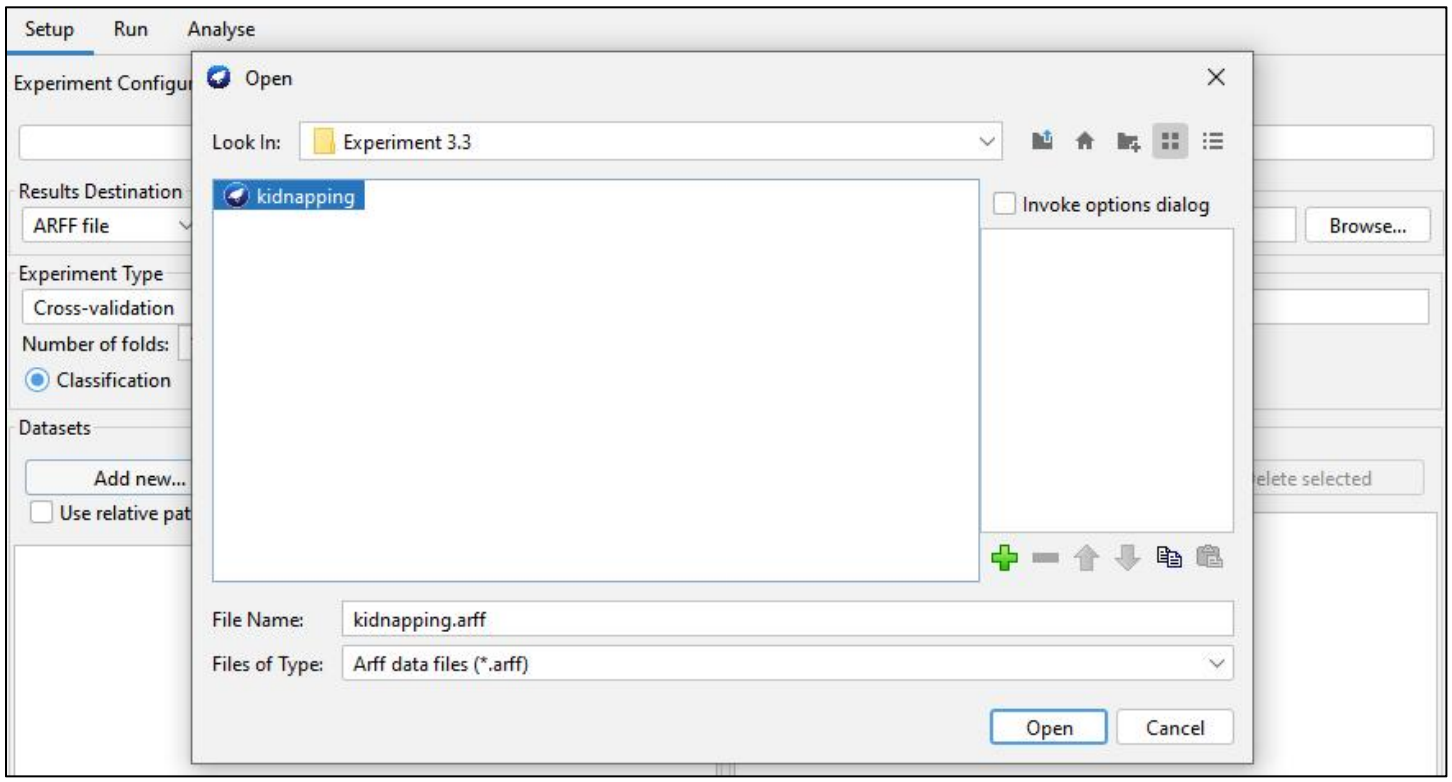
Step 4: Change the dataset from Numeric to Nominal. In **'Filter'** Section, click on **'Choose'** >> Unsupervised >> Attribute >> **Numeric to Nominal**. Click on **'Apply'** Option.

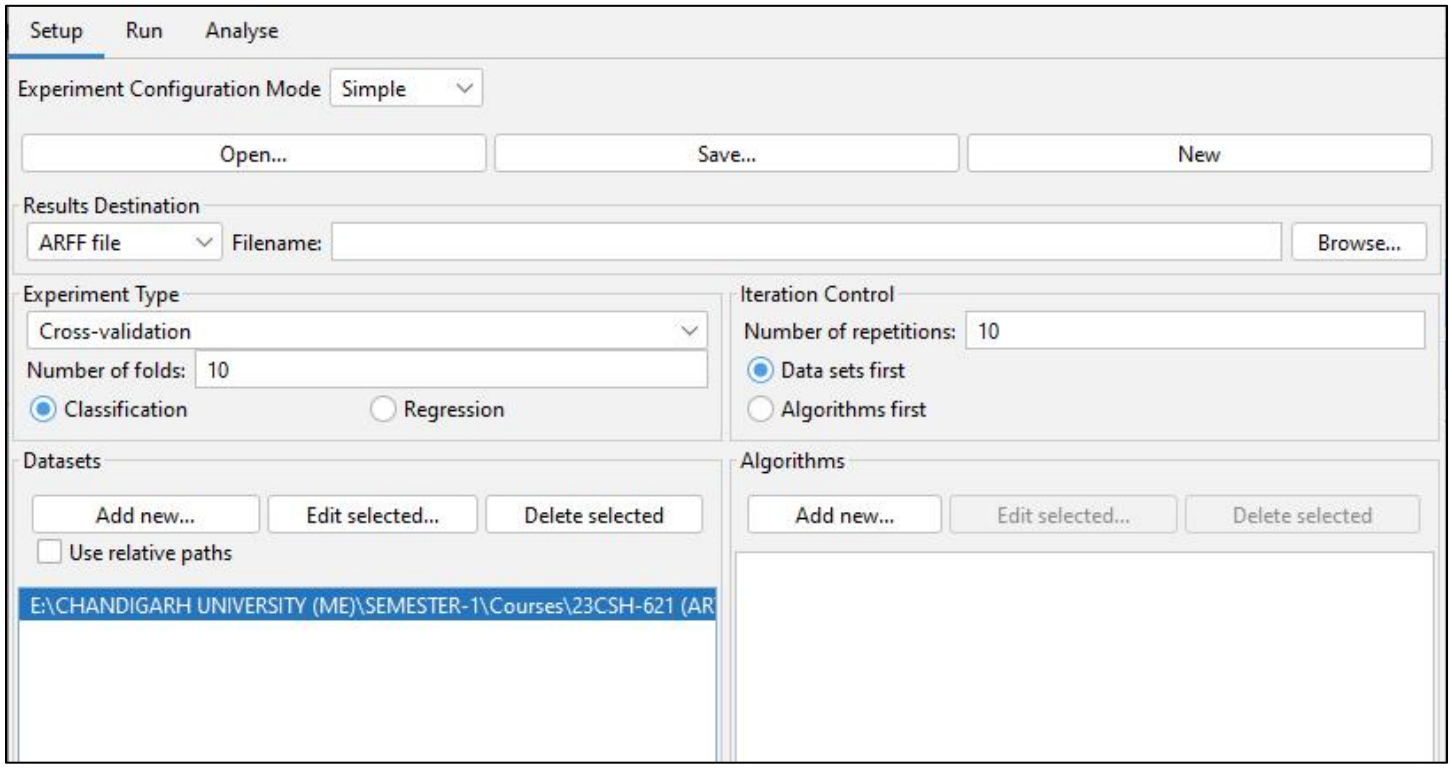


Step 5: Open the WEKA Tool and open the **'Experimenter'** tab.

Step 6: Click on the **'New'** option to initiate the process of adding data.

Step 7: In **'Datasets'** section, click on **'Add New'** option and select arff file to import.



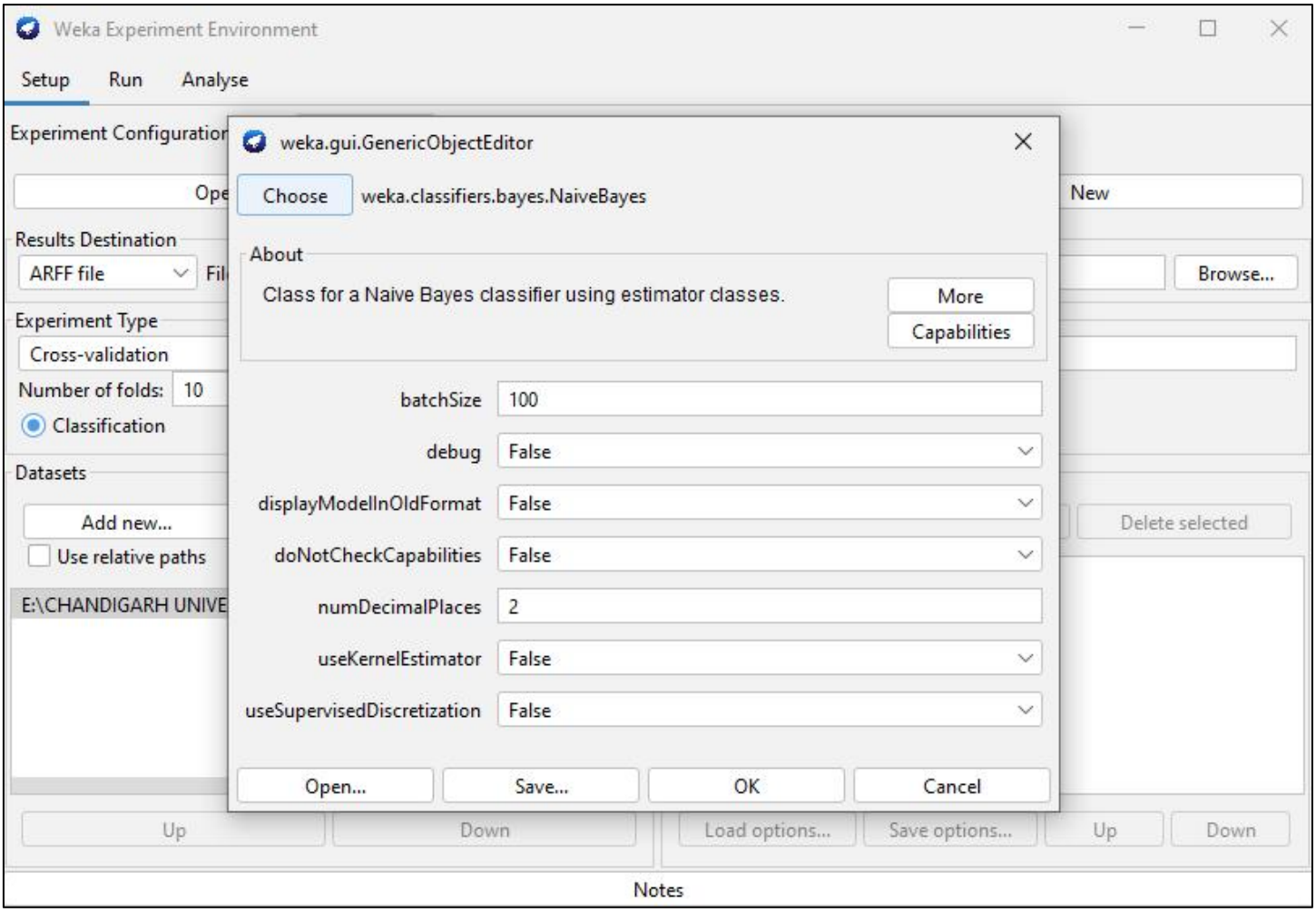


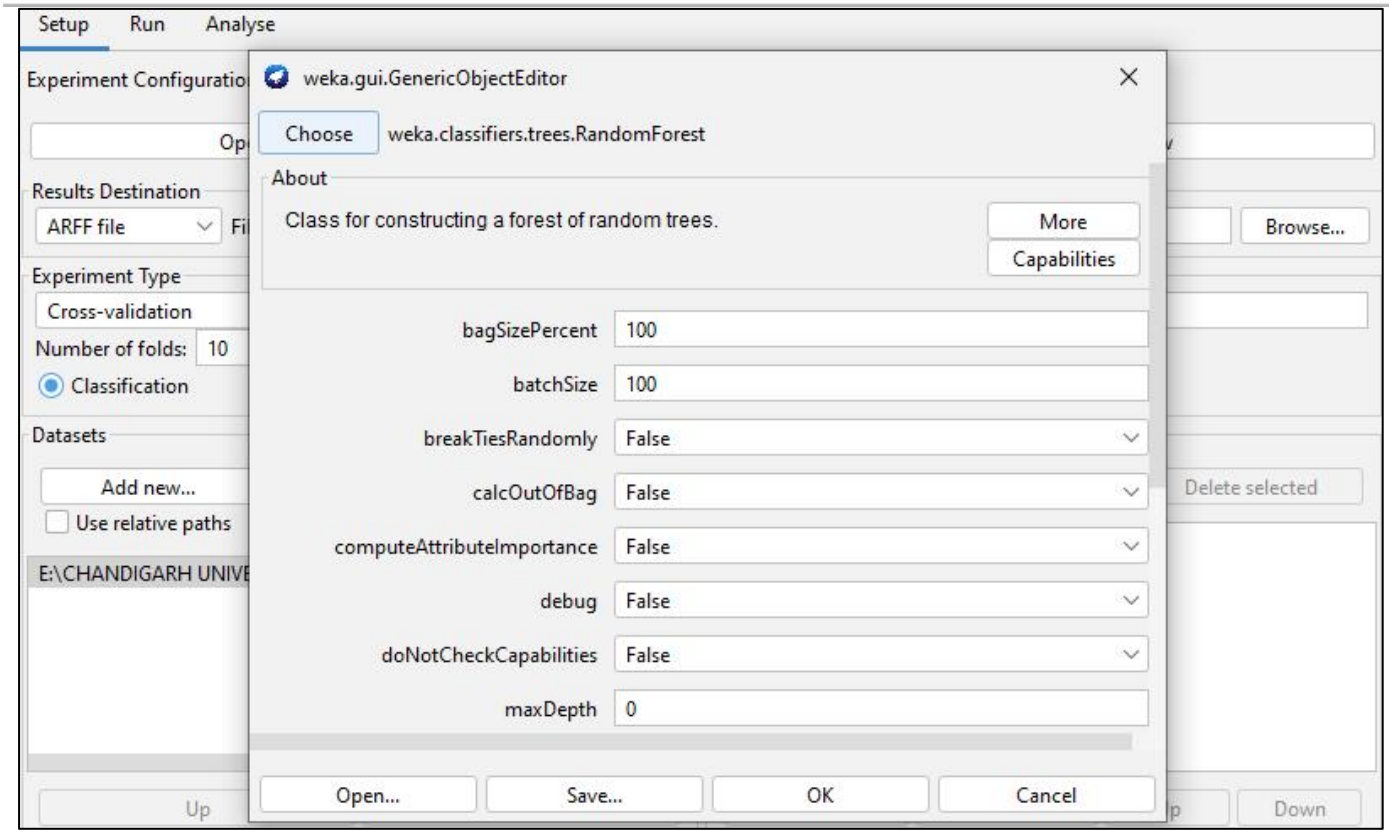
Step 8: In the Algorithms section,click on choose add new> choose>>**NaiveBayes**.

Step 9: In the Algorithms section,click on choose add new> choose>>**RandomForest**.

Step 10: In the Algorithms section,click on choose add new> choose>>**IBK(KNN classifier)**.

Step 11: In the Algorithms section,click on choose add new> choose>>**REPTree**.




Setup
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Number of folds: 10
Classification
Datasets
Add new...
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Browse...
Delete selected
Up
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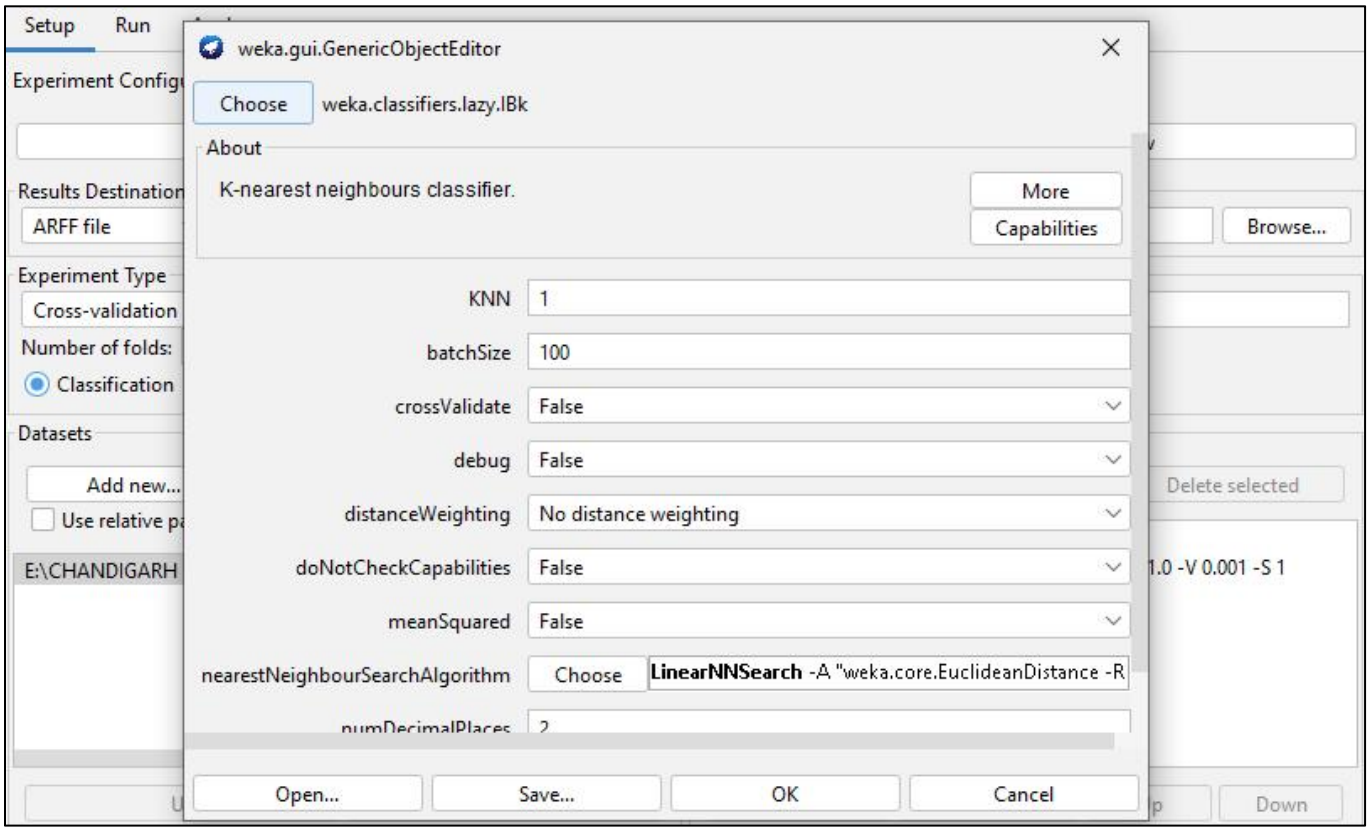
weka.gui.GenericObjectEditor
Choose
weka.classifiers.trees.RandomForest
About
Class for constructing a forest of random trees.
More
Capabilities
bagSizePercent 100
batchSize 100
breakTiesRandomly False
calcOutOfBag False
computeAttributeImportance False
debug False
doNotCheckCapabilities False
maxDepth 0
Open...
Save...
OK
Cancel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Results Destination
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1.0 -V 0.001 -S 1
Down
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Choose
weka.classifiers.lazy.IBk
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K-nearest neighbours classifier.
More
Capabilities
KNN 1
batchSize 100
crossValidate False
debug False
distanceWeighting No distance weighting
doNotCheckCapabilities False
meanSquared False
nearestNeighbourSearchAlgorithm
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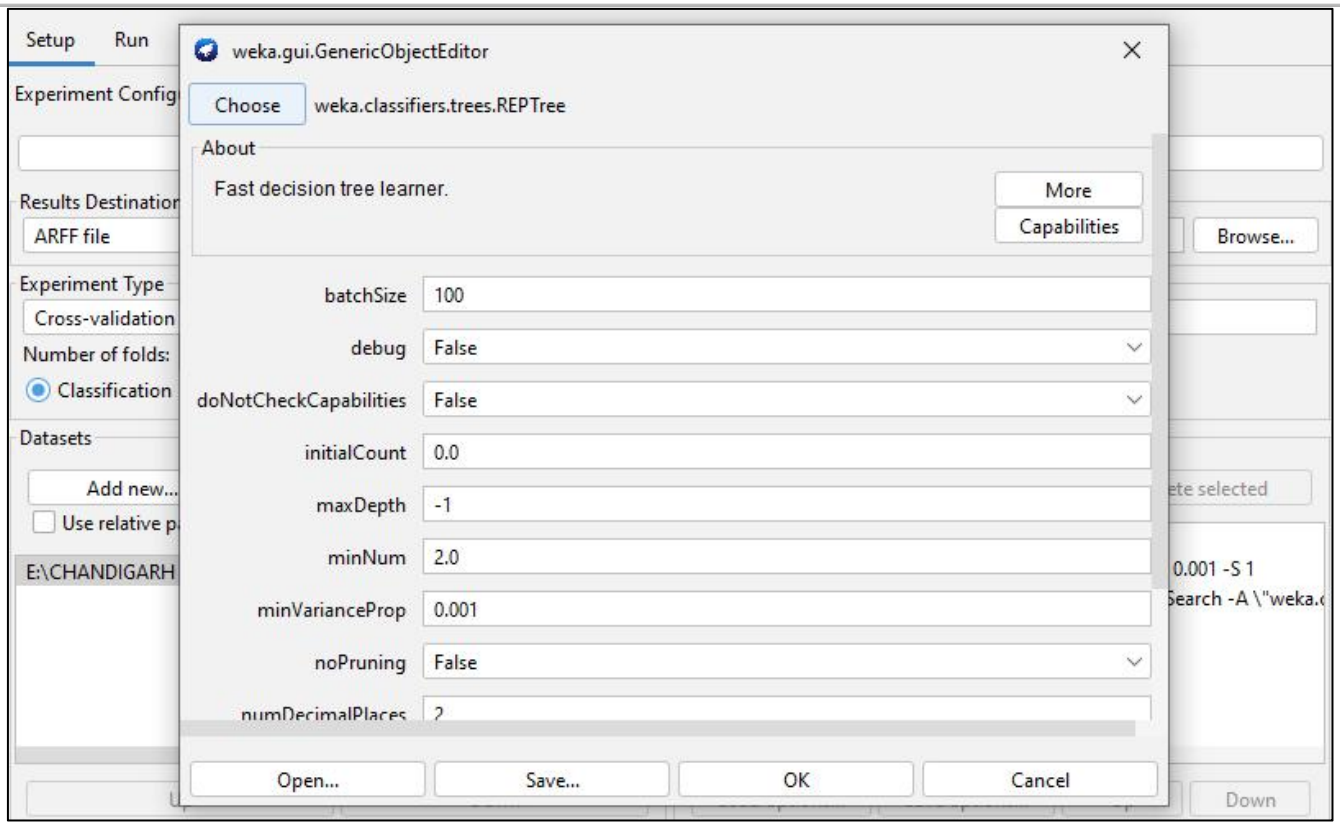
Save...
OK
Cancel


Setup
Run
weka.gui.GenericObjectEditor
Choose
weka.classifiers.trees.REPTree
About
Fast decision tree learner.
More
Capabilities
batchSize
100
debug
False
doNotCheckCapabilities
False
initialCount
0.0
maxDepth
-1
minNum
2.0
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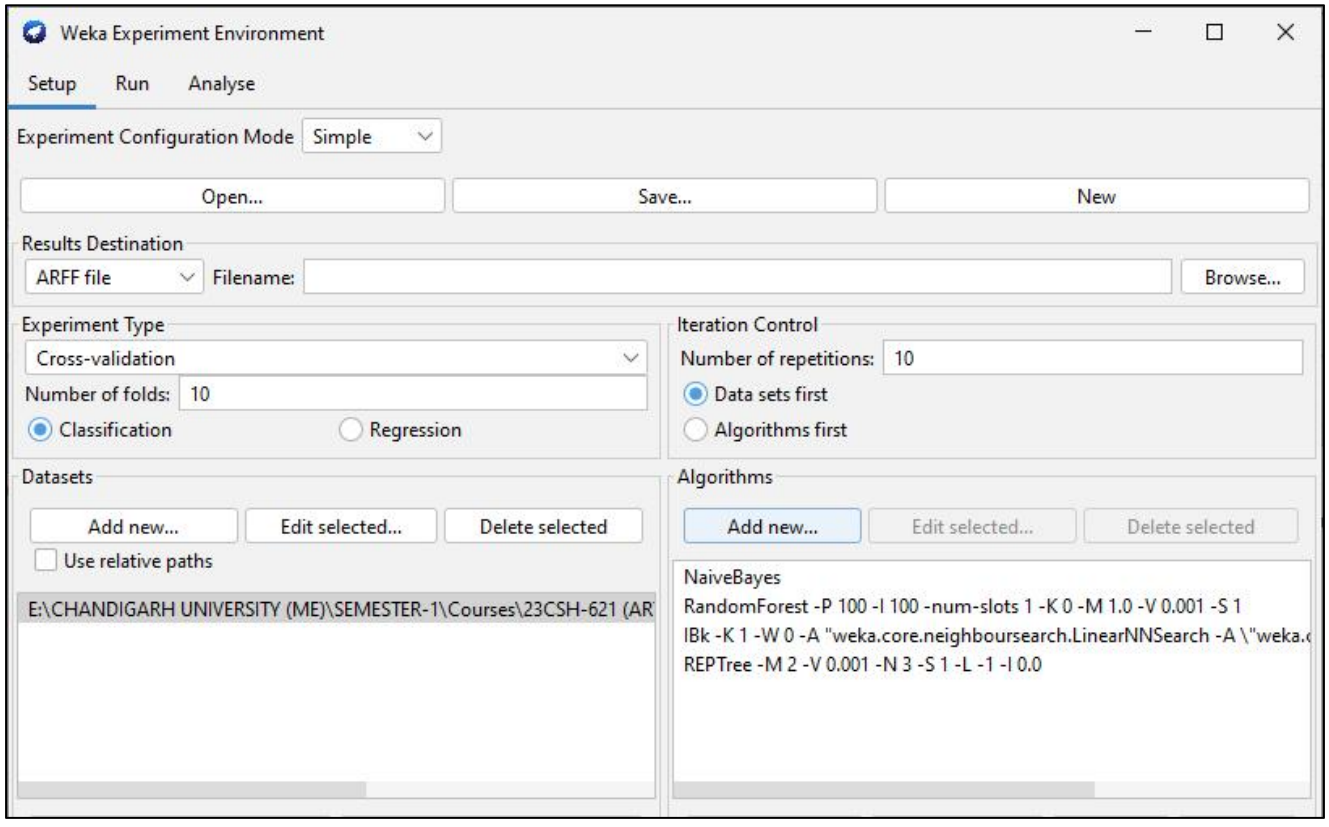
Weka Experiment Environment
Setup
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Analyse
Experiment Configuration Mode
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Open...
Save...
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Results Destination
ARFF file
Filename:
Browse...
Experiment Type
Cross-validation
Number of folds:
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Classification
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Number of repetitions:
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Data sets first
Algorithms first
Datasets
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Algorithms
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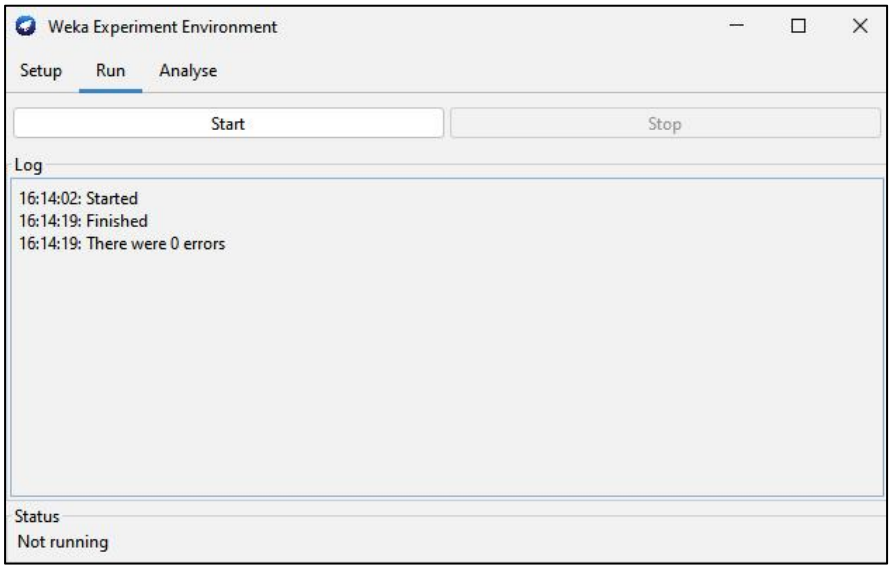
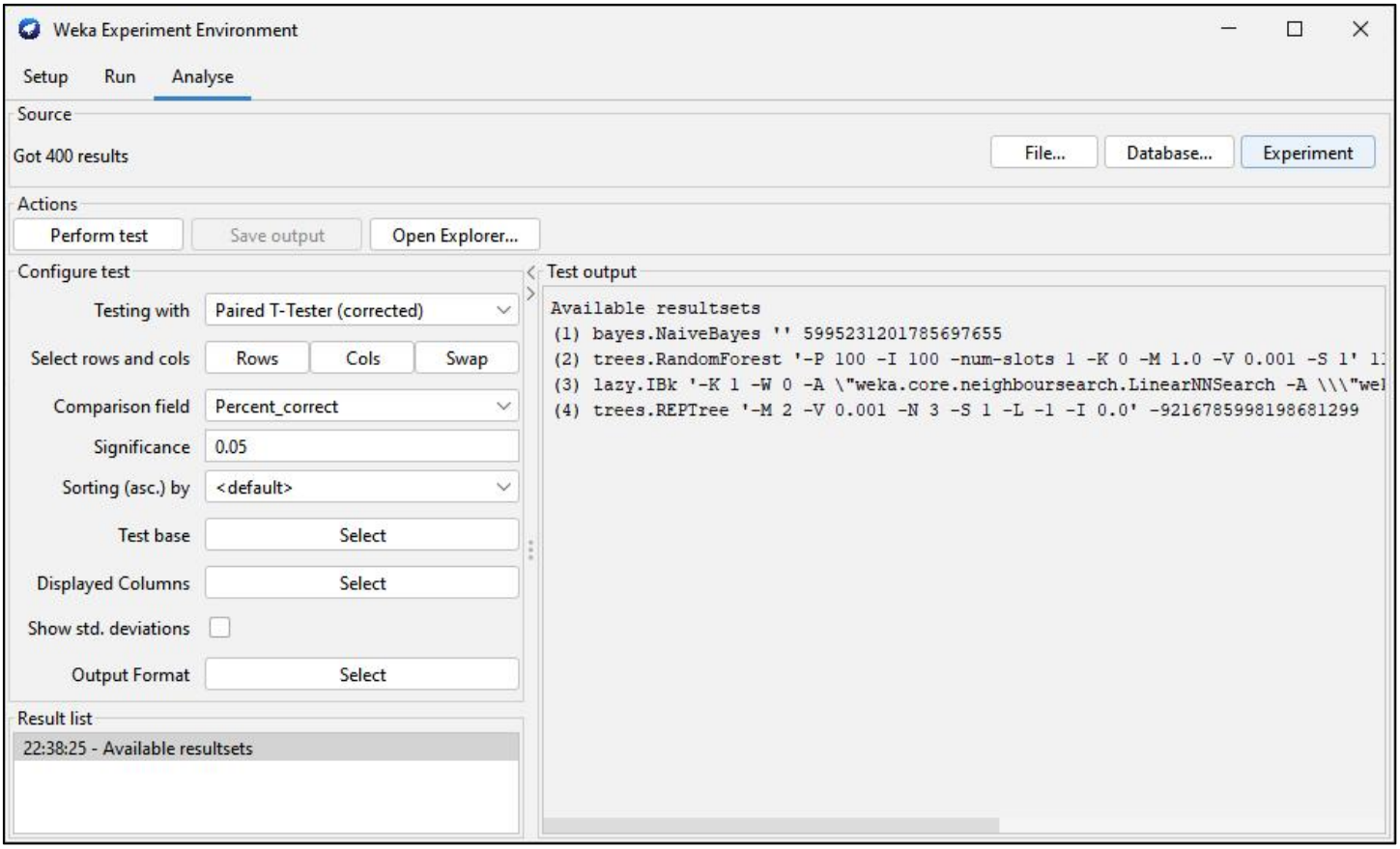
NaiveBayes
RandomForest -P 100 -I 100 -num-slots 1 -K 0 -M 1.0 -V 0.001 -S 1
IBk -K 1 -W 0 -A "weka.core.neighboursearch.LinearNNSearch -A \"weka.
REPTree -M 2 -V 0.001 -N 3 -S 1 -L -1 -I 0.0

Step 12: Click on **'Run'** tab >> click **'Start'**.

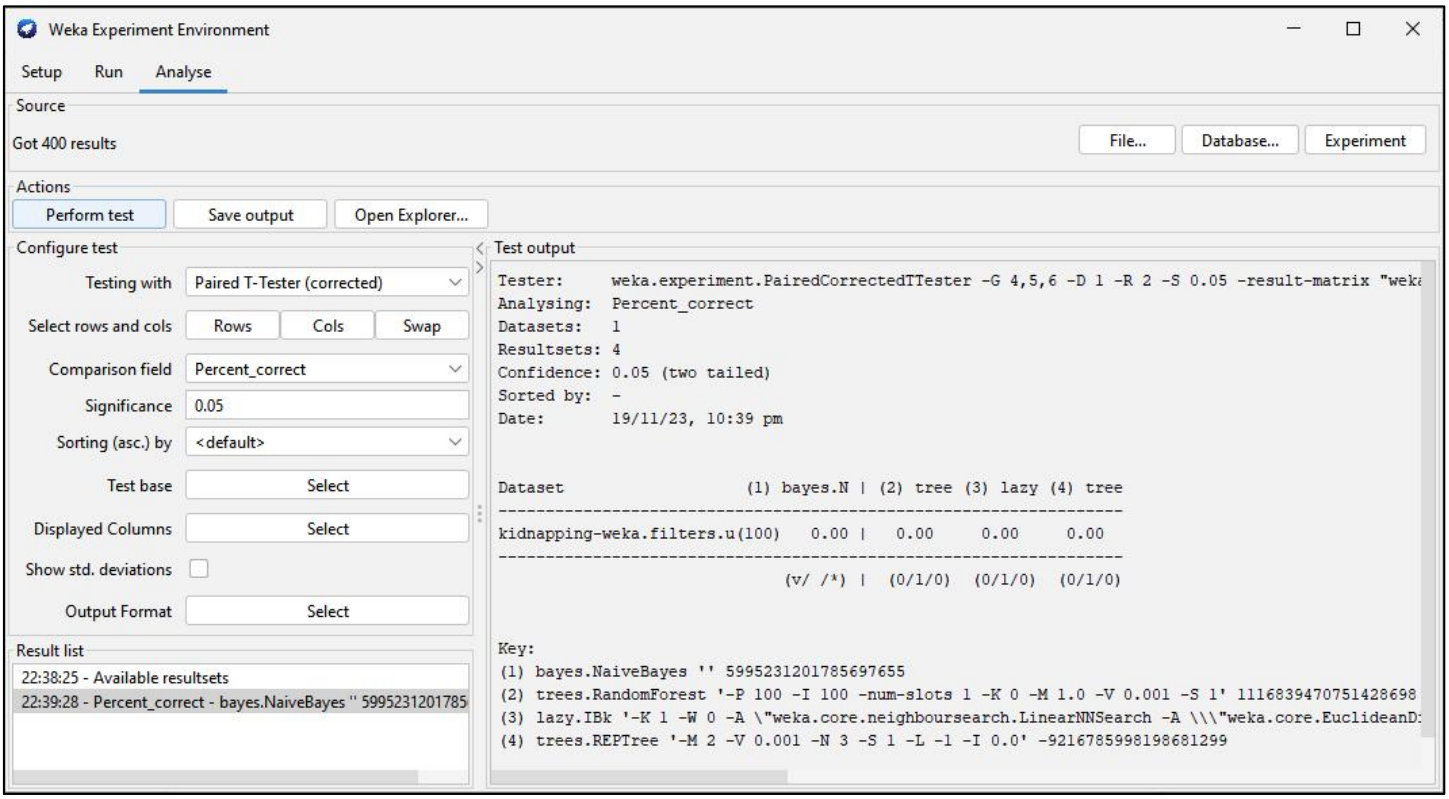


Step 13: After the execution is completed in 'Run' tab >>click on **'Analyse'** tab.

Step 14: In **'Analyse'** tab >> click on **'Experiment'** tab >> all the options will become active.



Step 15: Click on **Perform test**, it will show algorithms which have performed better and will display the ranking in **Test area.**



Learning outcomes (What I have learnt):

1. I learnt about the WEKA Tool and its applications.
2. I learnt about how to use the Experimenter Tab in WEKA.
3. I learnt about different machine learning classifiers in WEKA Tool.
4. I learnt about Ranking, F-Measure and Standard Deviation in WEKA.
5. I learnt about how to find the best prediction model in WEKA.