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CS478 : Brother Christophe
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Write a simple program to test the validity of the No Free Lunch. Your program should act on binary classification tasks over binary input spaces.

- Requirements for your program are as follows:
  - The user should be able to select the number I of input features. (For testing purposes, I would recommend choosing 3, or 4 at the most).
  - The user should be able to select the size M of the test set. You would then use N-M examples for training and M for testing (where N is 2^I).
  - Your program should interface with Weka, at least call the command line version of Weka from your code to run a classifier on a dataset.
  - The user should be able to select the name of the Weka classifier to use (remember that these are of the form 'class.name').
  - Your program should then run the selected classifier on all tasks (i.e., training sets) and test against the corresponding test set, and return the overall generalization performance (i.e., the sum of 'accuracy-50' across all tasks).
  - You may find this code (in python) useful. It has a number of functions to set up ARFF training and test sets for binary tasks.
- Run your program with a decision tree (J48), a back propagation learner (MultilayerPerceptron), Naive Bayes (NB), a majority learner (ZeroR). Record the generalization performance.

  Number of Inputs == 3, Number of Tests == 5

	Sum Accuracy	Sum 'accuracy-50'	S.A. / NUM_TASKS	S.A. – 50 / NUM_TASKS
J48	12800.0	0.0	50.0	0.0
MultiP	12800.0	0.0	50.0	0.0
NB	12800.0	0.0	50.0	0.0
ZeroR	12800.0	0.0	50.0	0.0
Minority	12800.0	0.0	50.0	0.0

- Is the NFL verified in every case? How do you explain what happens with the majority and minority learners?

  Yes, NFL is verified in every case. Given that the NFL problem iterates over all possible training tasks, half of those tasks are going to have a majority of one class and the other half are going to have majority of the other. The same is true for the minority. Therefore, the majority and minority learners also follow the NFL theorem.