

1. Download the Iris data set from:
<https://archive.ics.uci.edu/ml/datasets/Iris>
2. Run kNN and Decision Tree with 5-folder cross validation.
 - Decision tree classifier:
<http://scikit-learn.org/stable/modules/generated/sklearn.tree.DecisionTreeClassifier.html>
 - KNN classifier:
<http://scikit-learn.org/stable/modules/generated/sklearn.neighbors.KNeighborsClassifier.html>

To perform model training and model testing, write your own training and testing codes, for example:

training.py:

```
%read training set (a CSV file)  
%train a decision tree with training set  
%save the trained decision tree model to a txt file
```

testing.py:

```
%load the trained decision tree model from the txt file  
%read testing set (a CSV file)  
%compute the accuracy  
%save the results to a txt file
```

With your code, you can train the classifier (decision-tree/knn) with training set and test the learned model (decision-tree/knn) on test set. I recommend you to implement a simple five-fold cross validation by yourself.

For instance, we can create a

main.py:

```
% randomly split the data matrix into five exclusive partitions (namely part1, part2, part3, part4, part5) in terms of rows. Don't split data matrix in terms of features.  
%use part1 as testing set, part2+3+4+5 as training set, feed the training set to training.py and get a trained decision tree model, then feed the testing set to testing.py and get the result  
%similarly, you can apply the above step to part2, or part3, or part4, or part5 for testing  
%aggregate all the five results into an average performance measurement
```

3. Evaluate how K impacts the overall accuracy and f-measure of kNN on the dataset. Use histogram plots to visualize the results and identify the best K.

4. Compare the overall accuracies and f-measures of kNN with the best K and decision trees using histogram plots. Which classifier is better and why?

Please submit a report (PDF or word) that includes a link to your code, your answers/results, and your explanations or interpretations (if any).