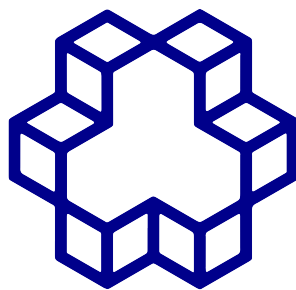


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# CODING ASSIGNMENT 1

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## KNN and K-fold



دانشگاه صنعتی خواجه نصیرالدین طوسی

Artificial Intelligence

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Deadline: 1403/02/27

## 1 Dataset

you are given a flower dataset that contains 3 different classes with 150 entries and 5 columns including [sepal length, sepal width, petal length, petal width, species].

## 2 KNN

Implement a function so that with given array as input, it returns the species using knn algorithm. choose your k equal to 10. ( Is 10 a good choice? what would happen if k was multiple of 3?)

for example, given the array [6,3,5,2] it should return Iris-virginica.

## 3 k-fold cross validation

Implement function kfold cross-validation , then test cross-validation with different k on the dataset, what k (5, 10, 15, 20, ...) do you think works best? ( better accuracy with lower computations)

In the above sections, you must implement knn and kfold by yourself and without using built-in functions of them (like `sklearn.neighbors.KNeighborsClassifier` or `sklearn.model_selection.cross_val_score`)