# Construct KNN Classifier

This example shows how to construct a *k*-nearest neighbor classifier for the Fisher iris data.

Load the Fisher iris data.

**Attribute Information:**

X--1. sepal length in cm (花萼长度)

2. sepal width in cm

3. petal length in cm (花瓣长度)

4. petal width in cm

Y--class:

-- Iris Setosa (山鸢尾)

-- Iris Versicolour (杂色鸢尾)

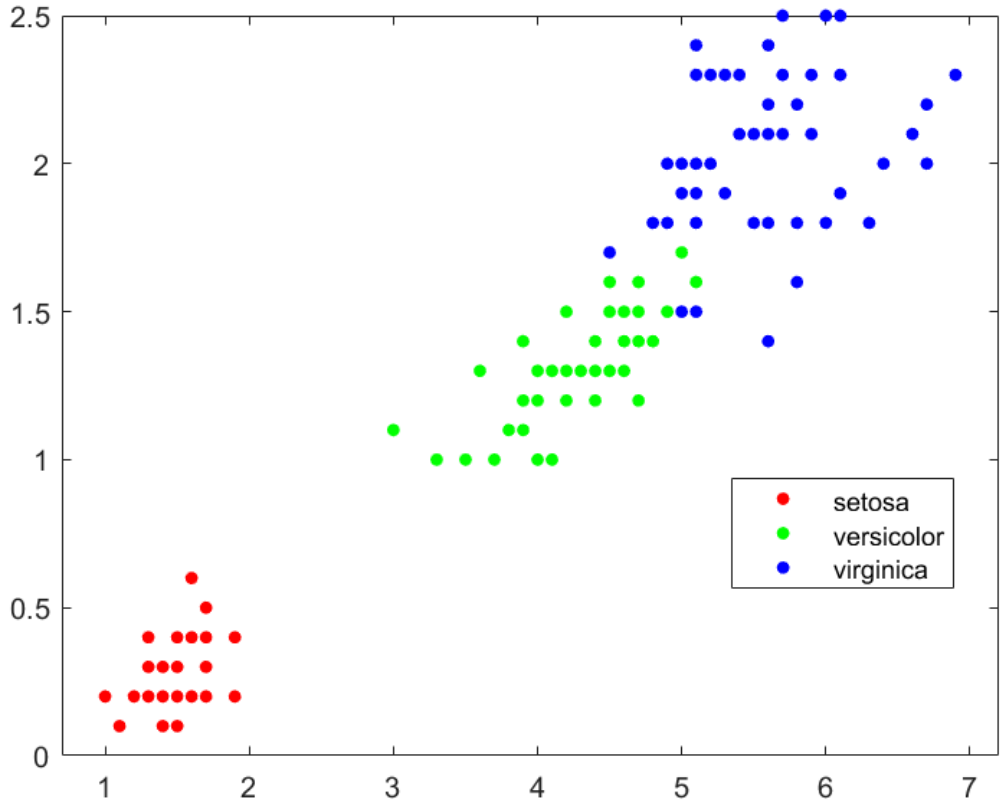
-- Iris Virginica (维吉尼亚鸢尾)

http://archive.ics.uci.edu/ml/datasets/Iris

```
load fisheriris
X = meas;    % Use all data for fitting
Y = species; % Response data
```

2D plot of some attributes

```
x = meas(:,3:4);
gscatter(x(:,1),x(:,2),species)
legend('Location','best')
```



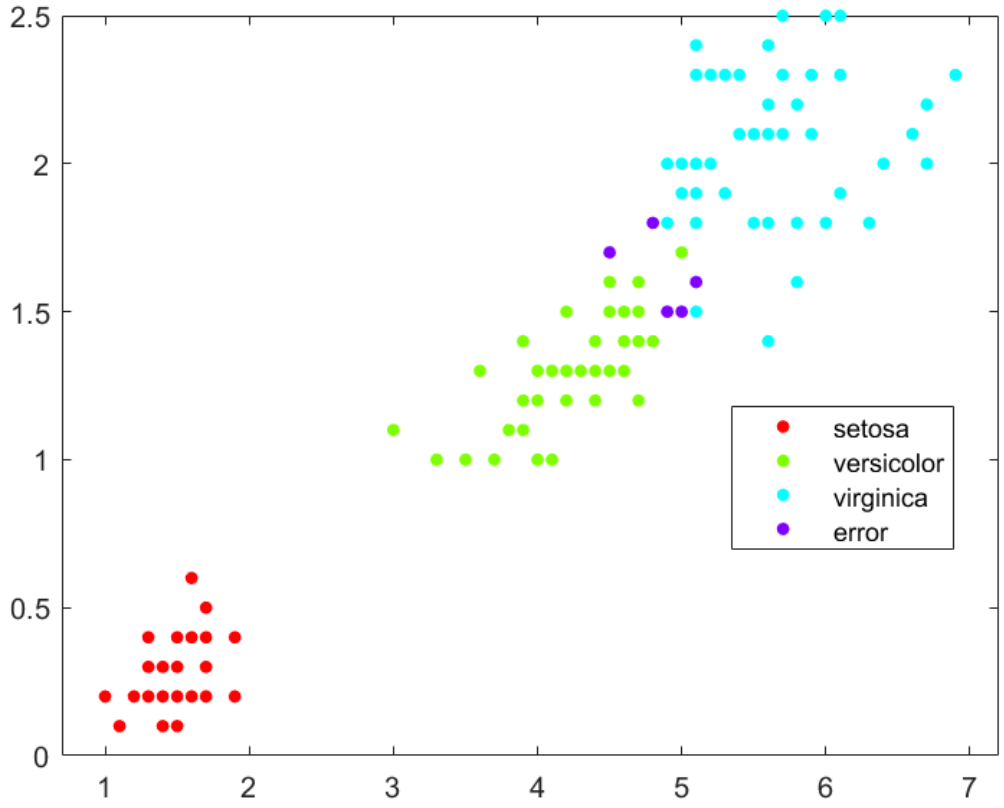

Construct the classifier using `fitcknn`.

```
Mdl = fitcknn(X,Y,'NumNeighbors',5);
```

A default *k*-nearest neighbor classifier uses a single nearest neighbor only. Often, a classifier is more robust with more neighbors than that.

Predict the classification of given flowers.

```
predictClass = predict(Mdl,X);
% mark the error points
%error = species~=predictClass;
error = categorical(species)~=categorical(predictClass);
predictClass = categorical(predictClass);
predictClass(error) = 'error';
gscatter(x(:,1),x(:,2),predictClass)
legend('Location','best')
```




```
accuracy = 1-sum(error)/150
```

```
accuracy = 0.9667
```