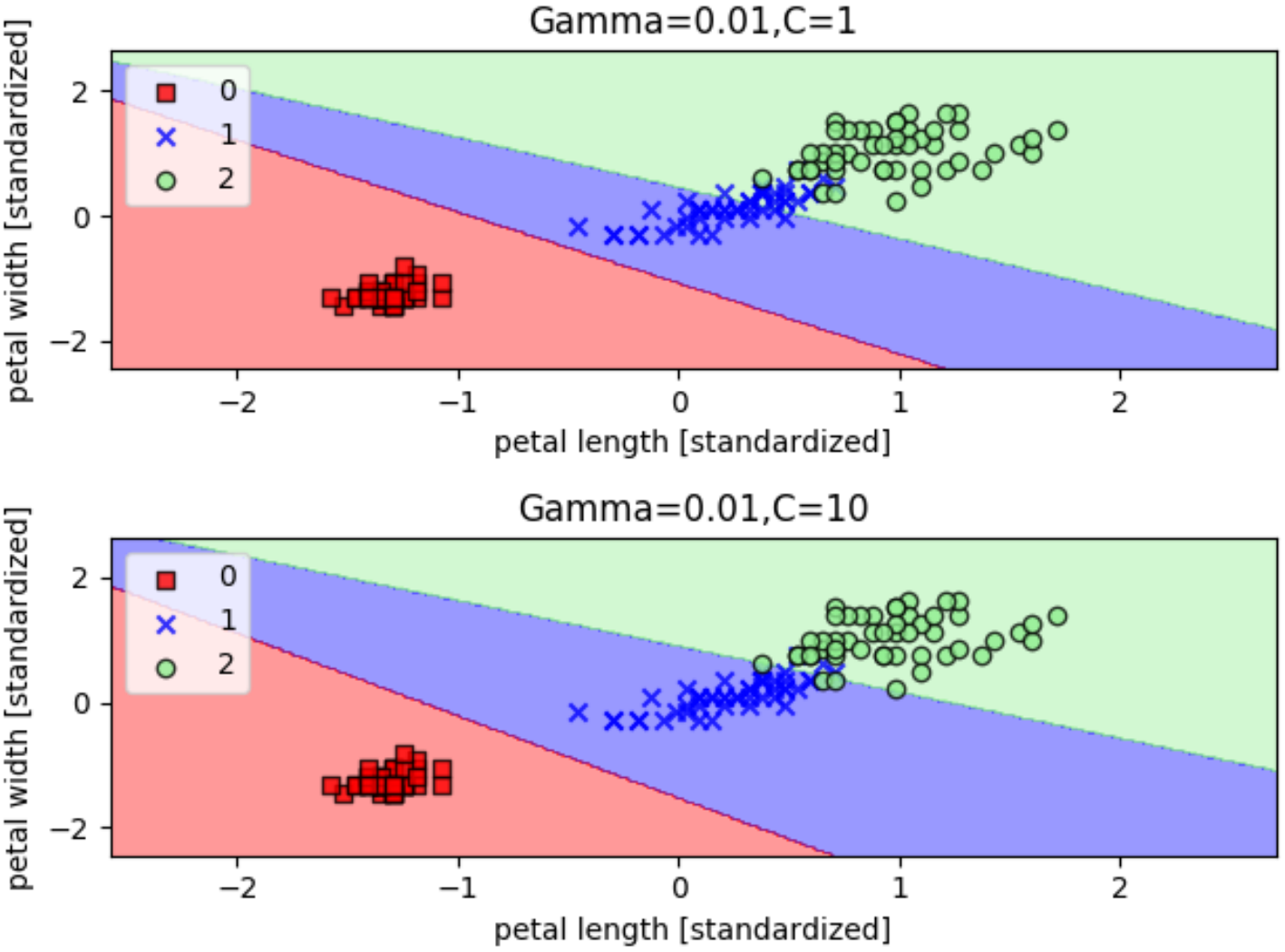
# Kernel SVM

- Using the SVC algorithm implemented by the Python Scikit-learn, classify the three types of flowers (Setosa, Versicolor, Virgin) in Iris dataset according to the **Petal length and width**.
- Plot the scatterplot with decision region for each different pair of cut-off parameter $\gamma$ and inverse regularization parameter C .
  - A small $\gamma = 0.01$; two values of C=1, 10 (one small and one big)
  - Thus there will be two pairs of $\{\gamma, C\}$: {0.01, 1} and {0.01, 10}
- Also explain why there is a good accuracy rate when a large C is paired with a small $\gamma$?

- Related parameter settings:
  - The ratio of training and test set is 7:3 using random_state=0 for dataset splitting
  - Use Standardized features for both training and testing dataset
  - Parameter setting for the Scikit-learn SVC:
    - $\{\gamma, C\}$: {0.01, 1} and {0.01, 10}
    - random_state=0
    - kernel=**rbf**

# Results


Gamma=0.01,C=1
petal width [standardized]
petal length [standardized]
0
1
2
Gamma=0.01,C=10
petal width [standardized]
petal length [standardized]
0
1
2