Applied Machine Learning
Homework 0

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1. Question 1 Solution

The Iris dataset contains 150 samples of flowers, each sample with 4 different features. These features are the values in centimeters of sepal's width and length along with petal's width and length. The iris flowers in the dataset can be of 3 different species, *Iris Setosa*,*Iris Versicolour* and *Iris Virginica*. All three species are evenly distributed on the 150 samples, meaning that there are 50 samples of each in the dataset.

2. Question 2 Solution

Source code written in HMW0.py parses the Iris Dataset into a 150x4 feature matrix and a 150x1 label vector. Parser is defined in method *getIris(filePath)*.

3. Question 3

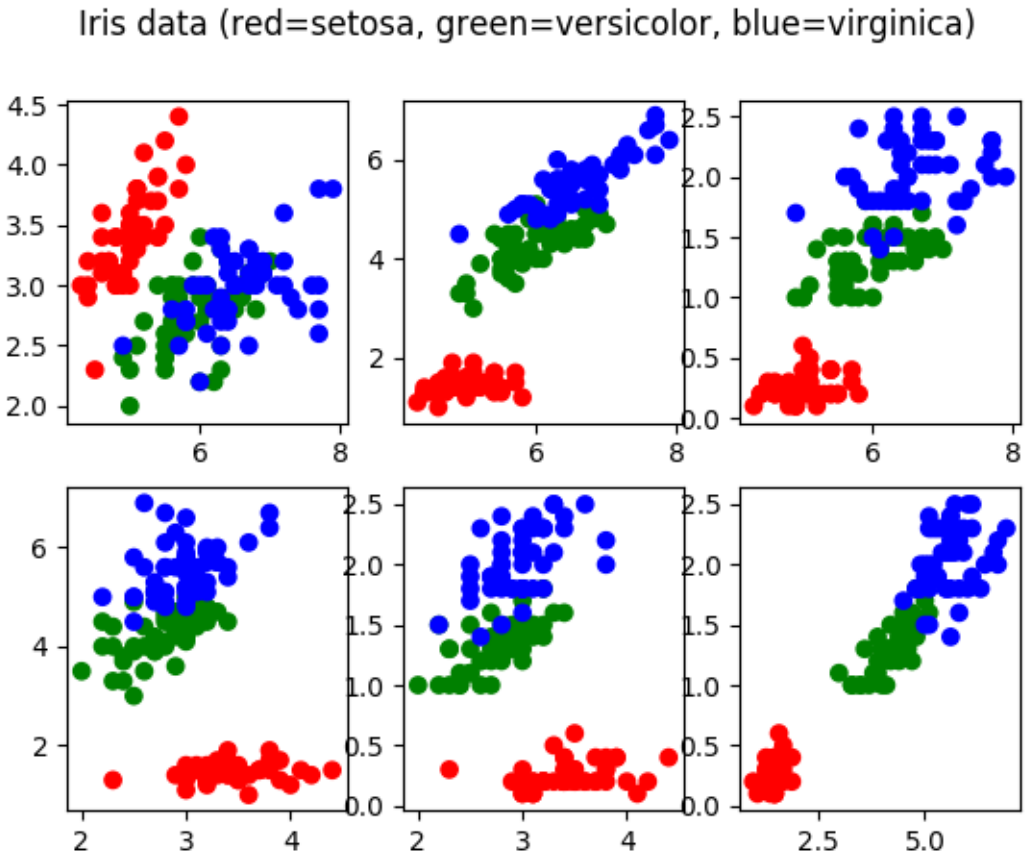
This section requires ploting all possible combinations to 2 different features in a figure. In order to determine how many plots are required, we perform a combinetion of 2 among all 4 features:

$$C_4^2 = \frac{4!}{2!(4-2)!} = 6 \tag{3.1}$$

In fact, there are 6 possible combinations between features:

1. Sepal Length vs Sepal Width
2. Sepal Length vs Petal Length
3. Sepal Length vs Petal Width
4. Sepal Width vs Petal Length
5. Sepal Width vs Petal Width
6. Petal Length vs Petal Width

HMW0.py also includes the plotting part of this item. Running the script with the Iris dataset outputed the following graph:



4. References

This section is dedicated to all online resources consulted in the creation of this solution to HMW0.

1. https://stackoverflow.com/questions/663171/is-there-a-way-to-substring-a-string-in-python
2. https://www.pythonforbeginners.com/dictionary/python-split
3. https://stackoverflow.com/questions/903853/how-do-you-extract-a-column-from-a-multi-dimensional-array
4. https://www.pythonforbeginners.com/dictionary/python-split
5. https://www.overleaf.com/latex/examples/introduction-to-electrical-engineering-example-assignment-template/pqvbrbjtjcqq#.W4ruHpNKj-Y
6. https://tex.stackexchange.com/questions/39930/hash-character-in-latex
7. https://www.latex-tutorial.com/tutorials/hyperlinks/
8. www.sharelatex.com/learn/Inserting_Images