# CSCI218: Foundations of Artificial Intelligence

UNIVERSITY
OF WOLLONGONG
AUSTRALIA

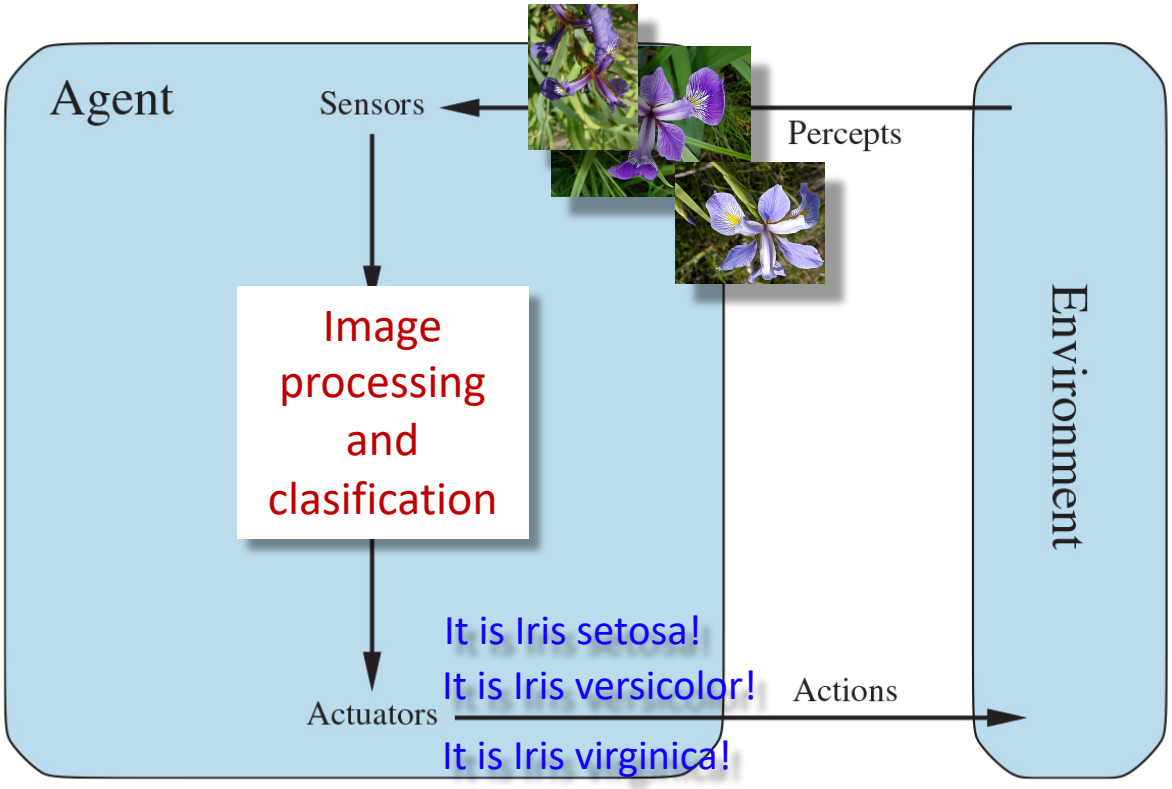
# Iris Flower Species Classification

Iris setosa

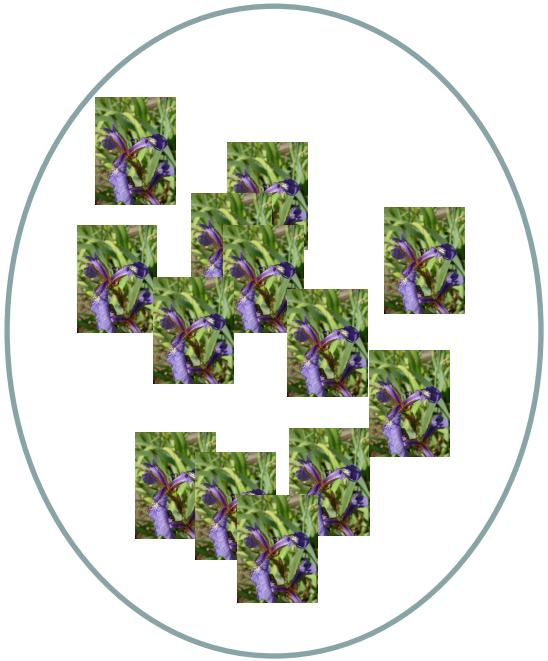
Iris versicolor

Iris virginica

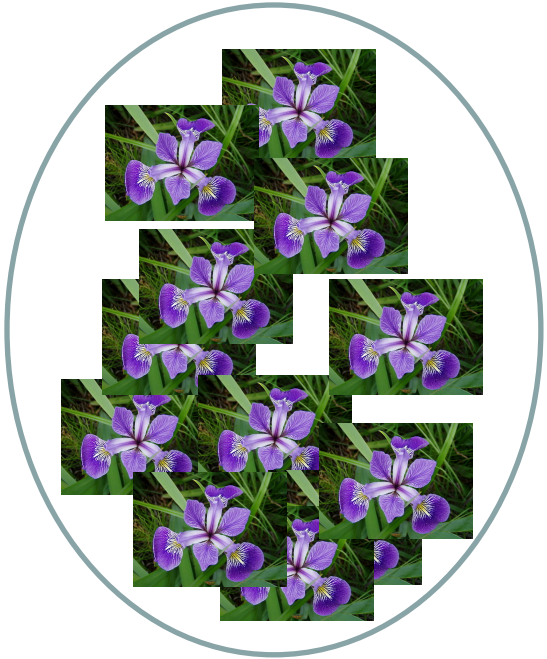
# Iris Flower Species Classification



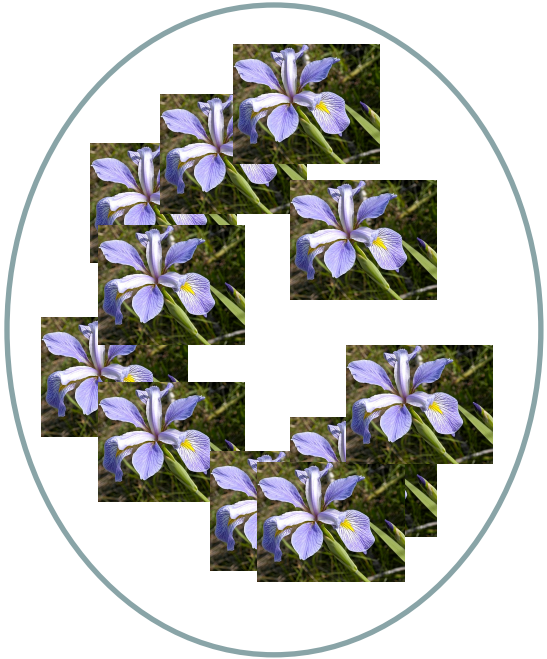
# Iris Flower Species Classification



Class 1: Iris setosa



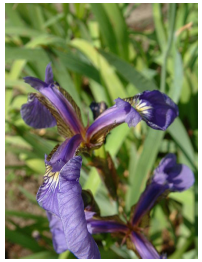
Class 2: Iris versicolor



Class 3: Iris virginica

# Iris Flower Species Classification

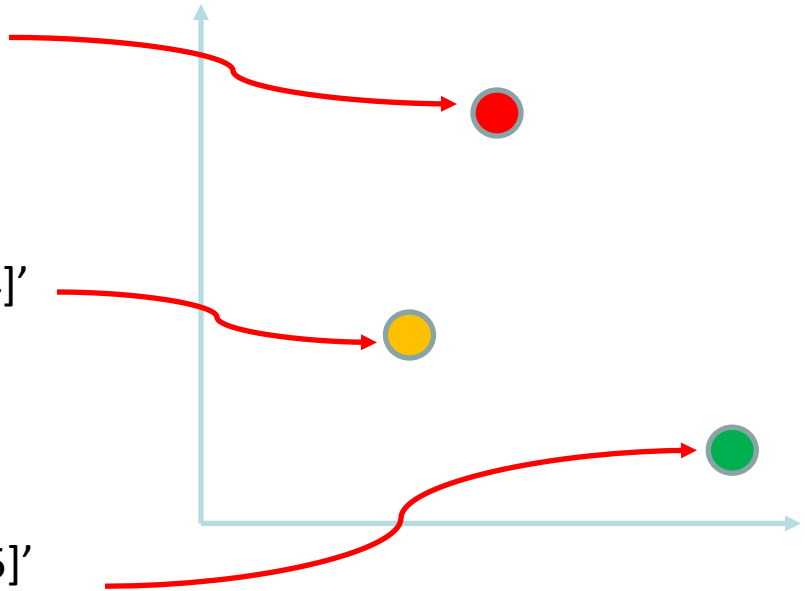
Four **features** were measured from each sample: the **length** and the **width** of the **sepals** and **petals**, in centimeters.



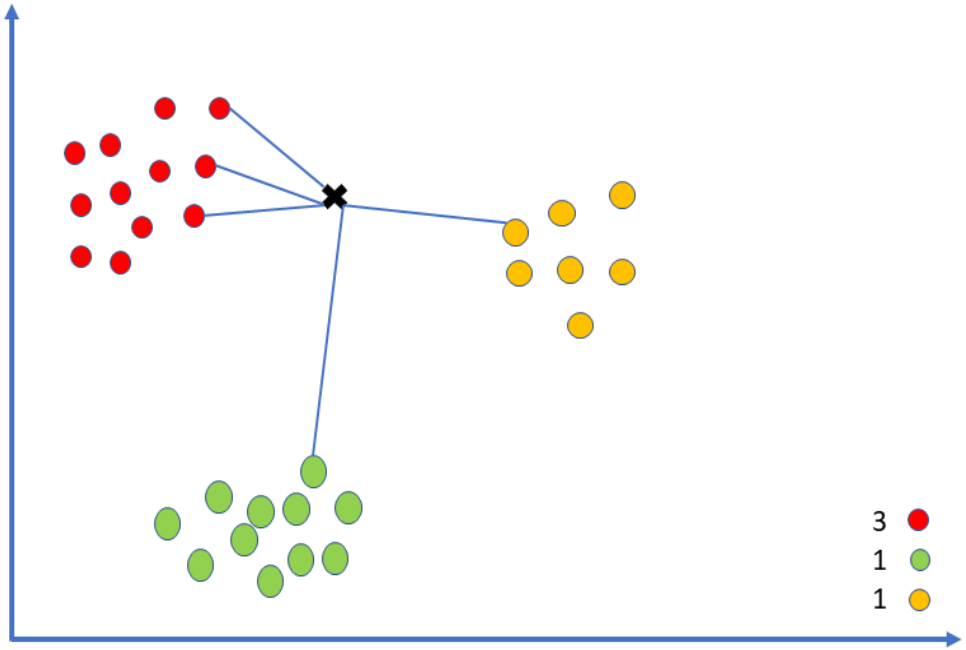
[5.1, 3.5, 1.4, 0.2]’

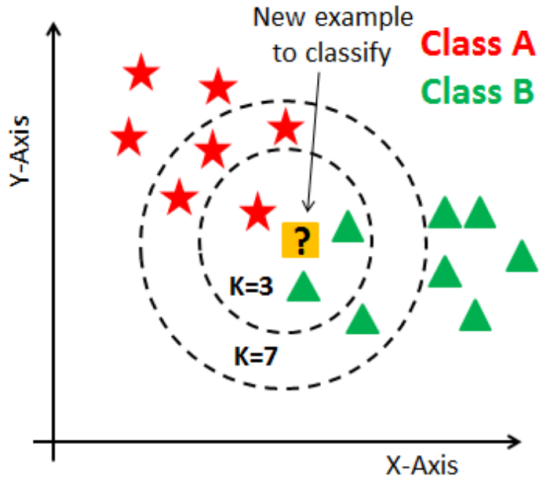
[7.0, 3.2, 4.7, 1.4]’

[6.3, 3.3, 6.0, 2.5]’



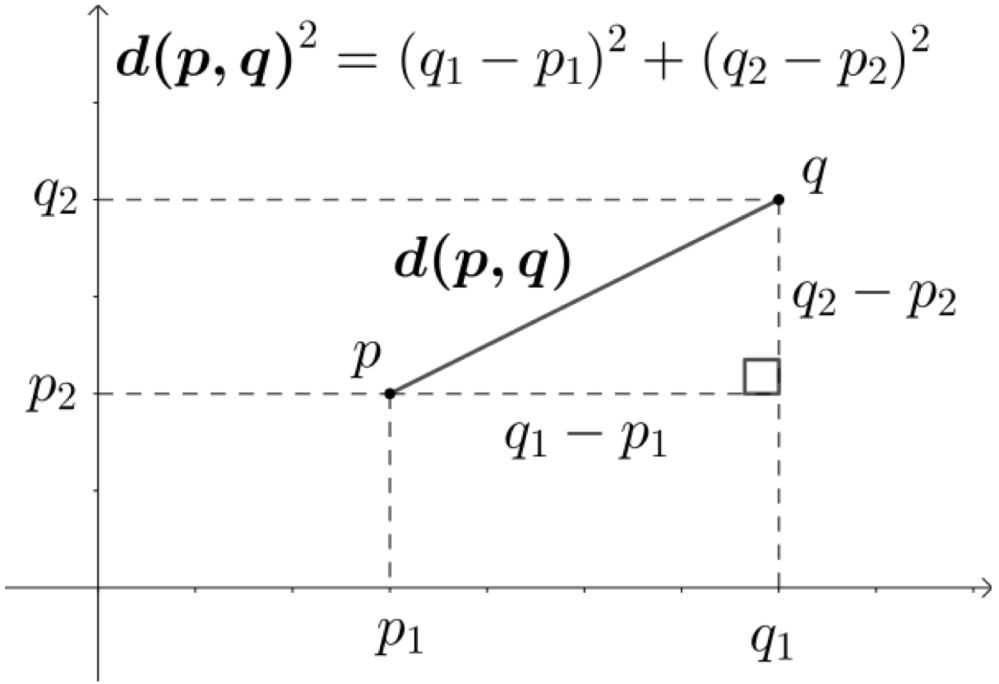
# K-nearest-neighbor classifier




Let's use **Euclidean distance**

# K-nearest-neighbor classifier




Let's use **Euclidean distance**

# Lab Task (Python)

- Load data in (iris.csv)
- Randomly split data into two sets (50% training set and 50% test set)
- Set the value of k = 1, 3, 5, 7, …, respectively
- For each sample x in the test set
  - Compute its Euclidean distance to all the samples in the training set
  - Sort the distances to find the k nearest neighbors of x in training set
  - Do a majority voting of the class labels of the k nearest neighbors
  - Assign the major class labels to x
- Calculate and report the classification error rate vs. k

# Lab Task (Python)

- Setup Python environment
- Learn to program with Python
- Learn to use library, package, and modules of Python
- **Must implement k-nearest-neighbor classifier from scratch**
- Learn to visualize the classification result

- **Submit** this lab and obtain feedback (**No mark** is awarded)
- **Deadline**: 11:59PM Next Monday; via Moodle

# Thank you. Questions?

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