機器學習

scikit-learn

scikit-learn

- Simple and efficient tools for predictive data analysis
- Accessible to everybody, and reusable in various contexts
- Built on NumPy, SciPy, and matplotlib
- Open source, commercially usable - BSD license

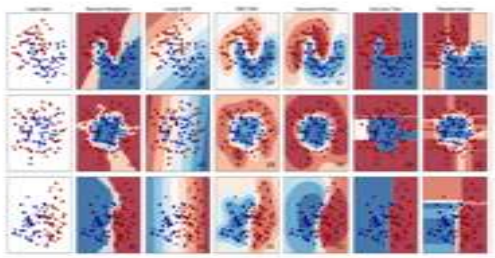
scikit-learn

來源: scikit-learn官網

Classification

Identifying which category an object belongs to.

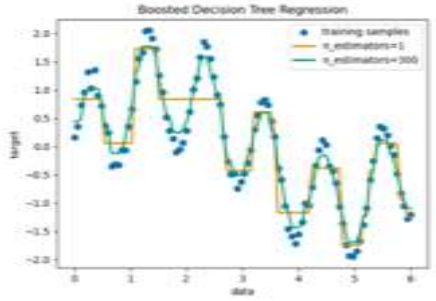
Applications: Spam detection, image recognition.
Algorithms: SVM, nearest neighbors, random forest, and more...



Regression

Predicting a continuous-valued attribute associated with an object.

Applications: Drug response, Stock prices.
Algorithms: SVR, nearest neighbors, random forest, and more...



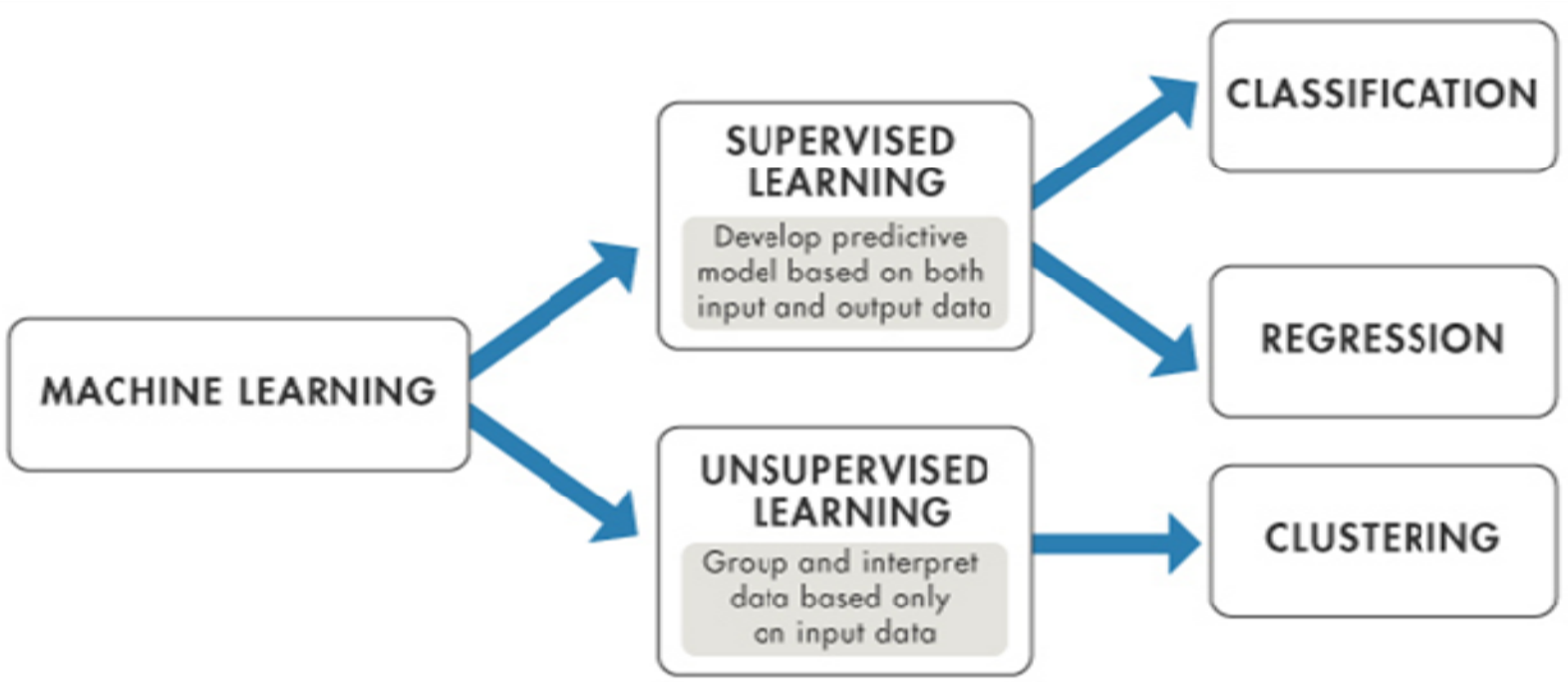
Clustering

Automatic grouping of similar objects into sets.

Applications: Customer segmentation, Grouping experiment outcomes
Algorithms: k-Means, spectral clustering, mean-shift, and more...

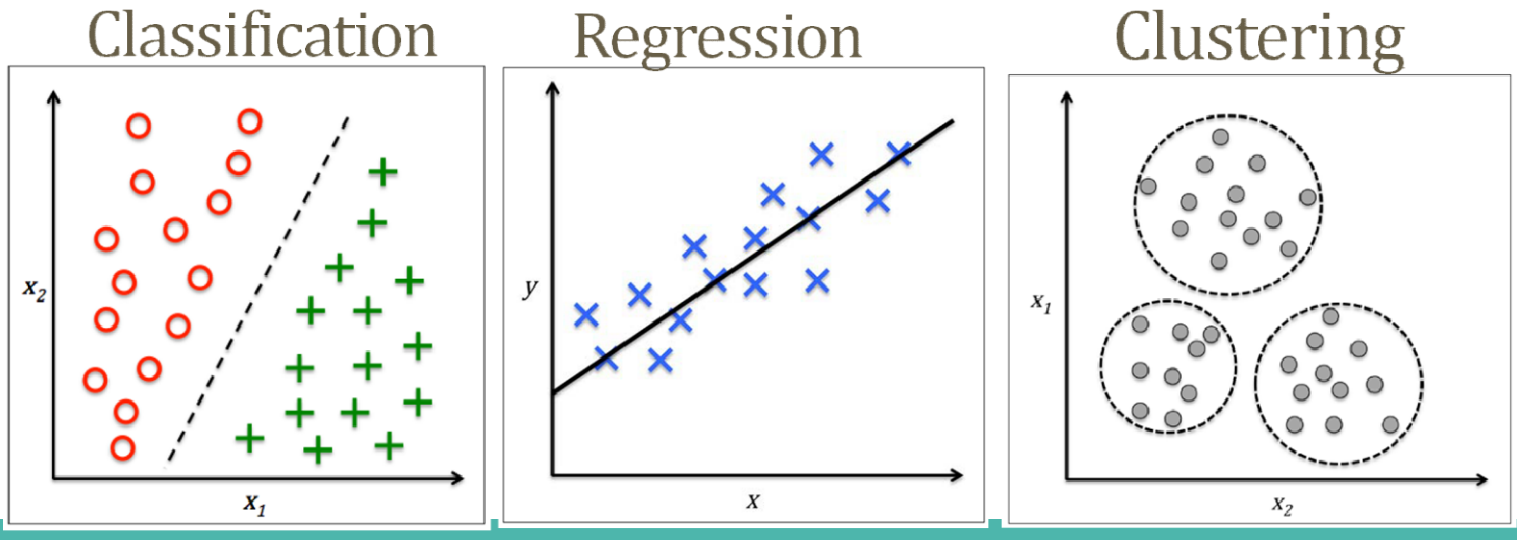
機器學習

- 我們常做的事


MACHINE LEARNING
SUPERVISED LEARNING
Develop predictive model based on both input and output data
UNSUPERVISED LEARNING
Group and interpret data based only on input data
CLASSIFICATION
REGRESSION
CLUSTERING

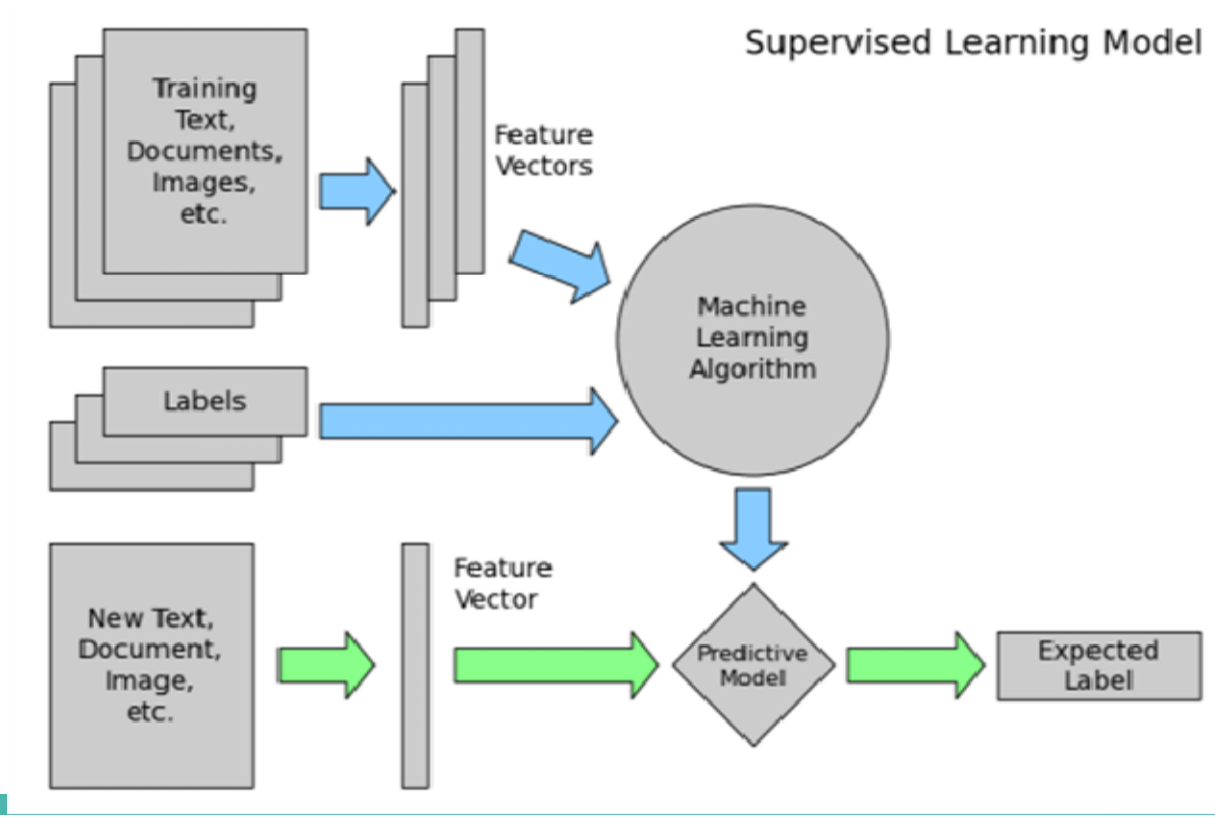
機器學習

- 我們常做的事

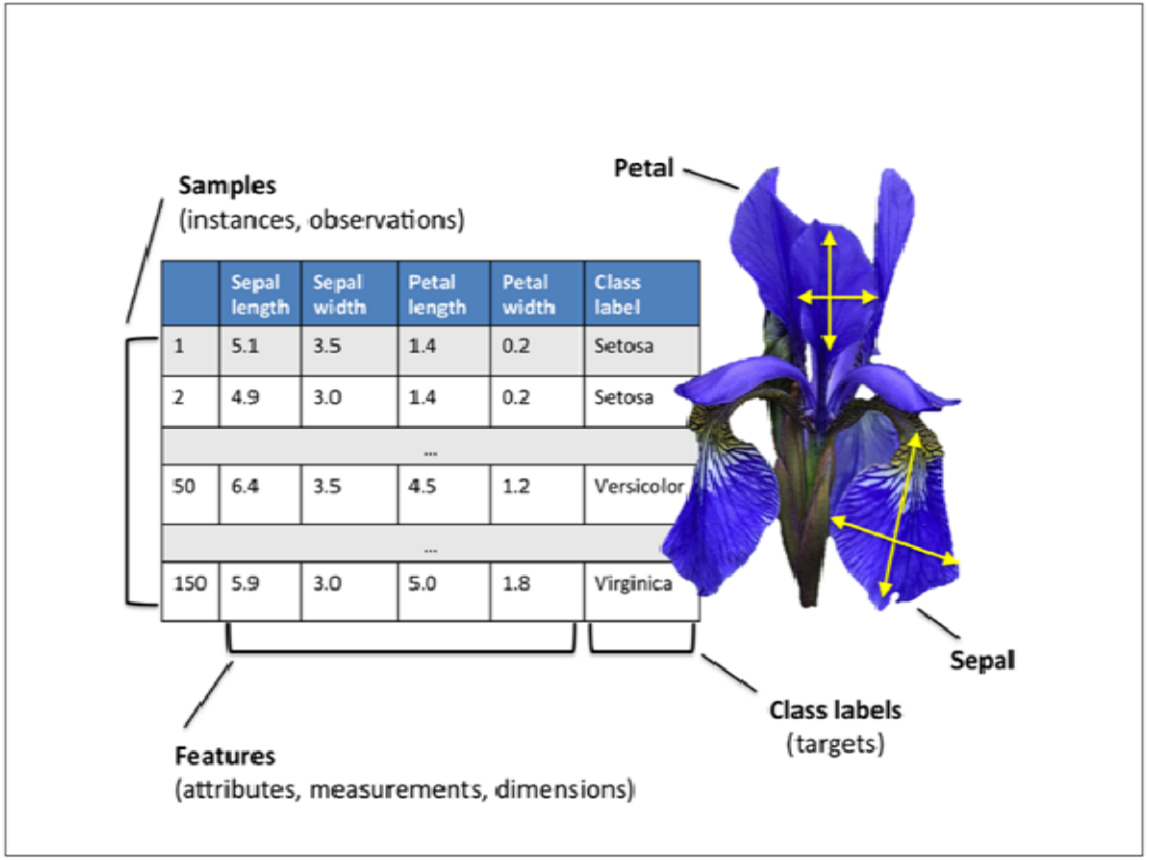


Supervised Learning

Supervised Learning



經典範例



	Sepal length	Sepal width	Petal length	Petal width	Class label
1	5.1	3.5	1.4	0.2	Setosa
2	4.9	3.0	1.4	0.2	Setosa
...					
50	6.4	3.5	4.5	1.2	Versicolor
...					
150	5.9	3.0	5.0	1.8	Virginica

經典範例- SVM

- 經典四步驟
  - 載入模型
  - 建立模型
  - 訓練模型
  - 使用模型預測

```
#1. 載入模型
from sklearn.svm import SVC
```

```
#2. 建立模型
clf = SVC()
```

```
#3. 訓練模型
clf.fit(x_train, y_train)
```

```
#4. 使用模型來做預測
y_predict = clf.predict(x_test)
```

經典範例- LinearRegression

- 經典四步驟
  - 載入模型
  - 建立模型
  - 訓練模型
  - 使用模型預測

```
#1. 載入模型
from sklearn.linear_model import LinearRegression
```

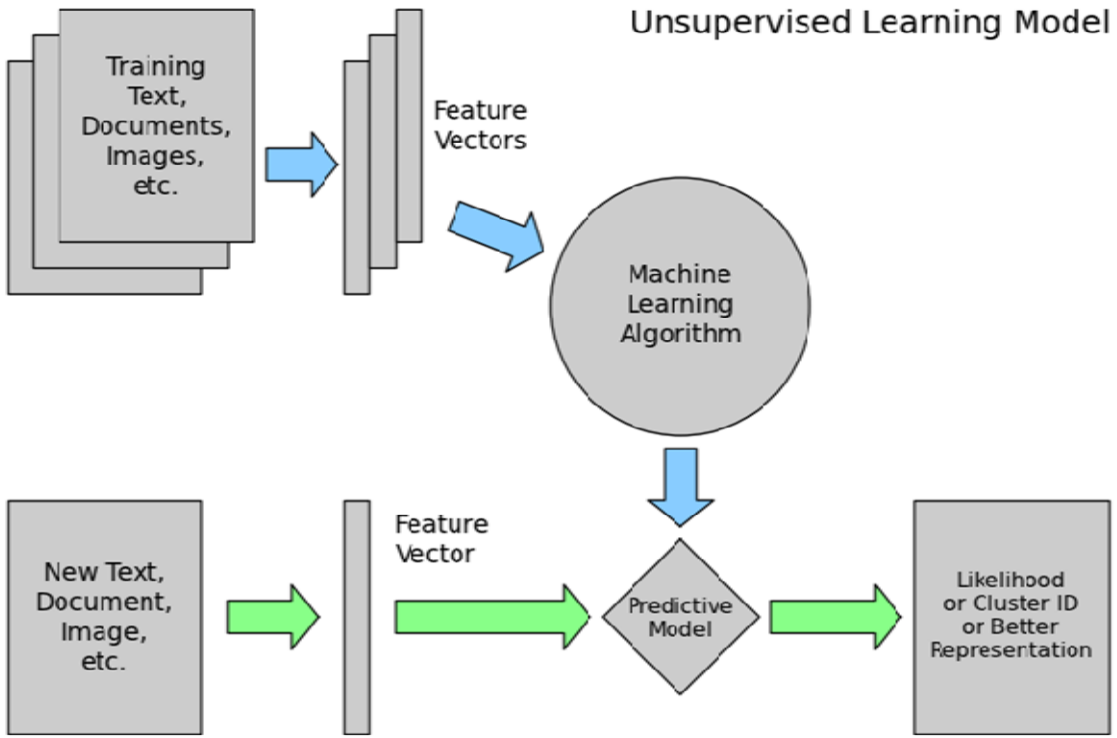
```
#2. 建立模型
regr = LinearRegression()
```

```
#3. 訓練模型
regr.fit(x_train, y_train)
```

```
#4. 使用模型來做預測
regr.predict(x_test)
```

Unsupervised Learning

Unsupervised Learning



經典範例- KMeans

- 經典四步驟
  - 載入模型
  - 建立模型
  - 訓練模型
  - 使用模型預測

```
# 1. 載入想要用的模型
from sklearn.cluster import KMeans
```

```
#2. 建立模型
clf = KMeans(n_clusters=3)
```

```
#3. 訓練模型
clf.fit(x)
```

```
#4. 使用模型來預測
clf.predict(y)
```