Pattern Recognition

Modern definition:

The field of pattern recognition is concerned with the automatic discovery of regularities in data through the use of computer algorithms and with the use of these regularities to take actions such as classifying the data into different categories.

利用資料的規律與相似性來分類資料。

Major uses:

computer-aided diagnosis (CAD) systems 電腦輔助診斷系統

speech recognition 自動語音識別

speaker identification 聲源辨識

classification of text into several categories 文字分類

recognition of handwriting 手寫文字識別

recognition of images of human faces 人臉識別

fingerprint identification 指紋辨識

Real Application:

identification and authentication(指紋認證、面部認證、聲紋認證)

medical diagnosis(醫療影像自動辨識、影像分析)

mobility(自動駕駛系統、駕駛輔助)

Algorithms:

Classification methods (methods predicting categorical labels)

Clustering methods (methods for classifying and predicting categorical labels)

Ensemble learning algorithms (supervised meta-algorithms for combining multiple learning algorithms together)

Multilinear subspace learning algorithms (predicting labels of multidimensional data using tensor representations)

Real-valued sequence labeling methods (predicting sequences of real-valued labels)

Regression methods (predicting real-valued labels)

Sequence labeling methods (predicting sequences of categorical labels)

每種方法各有數個演算法。