PATTERN RECOGNITION
LECTURE 1
INTRODUCTION

LECTURE NOTES

01-01-2019

Text books

- Pattern Classification (2nd. Edition) by R. O. Duda, P. E. Hart and D. Stork, Wiley 2002
- Pattern Recognition and Machine Learning by C. Bishop, Springer 2006
- Statistics and the Evaluation of Evidence for Forensic Scientists by C. Aitken and F. Taroni, Wiley, 2004

Evaluation

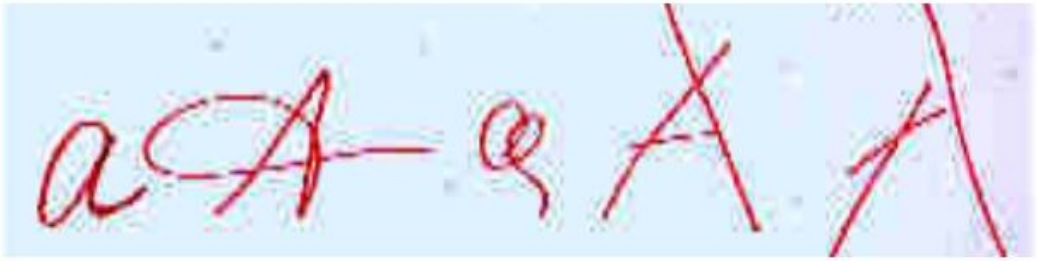
- Quiz 1 :20
- Quiz 2 :20
- End Sem :40
- Assignment :20

Pattern

- A pattern is an abstract object, such as a set of measurements describing a physical object.
- A pattern could be an object, an event or a process.

Examples of patterns

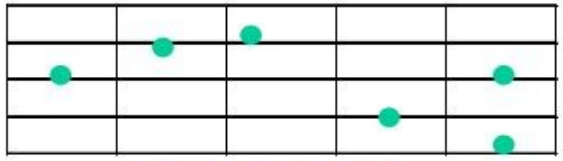
Handwritten Characters



UPC BarCode

Fingerprint

Animal Footprint



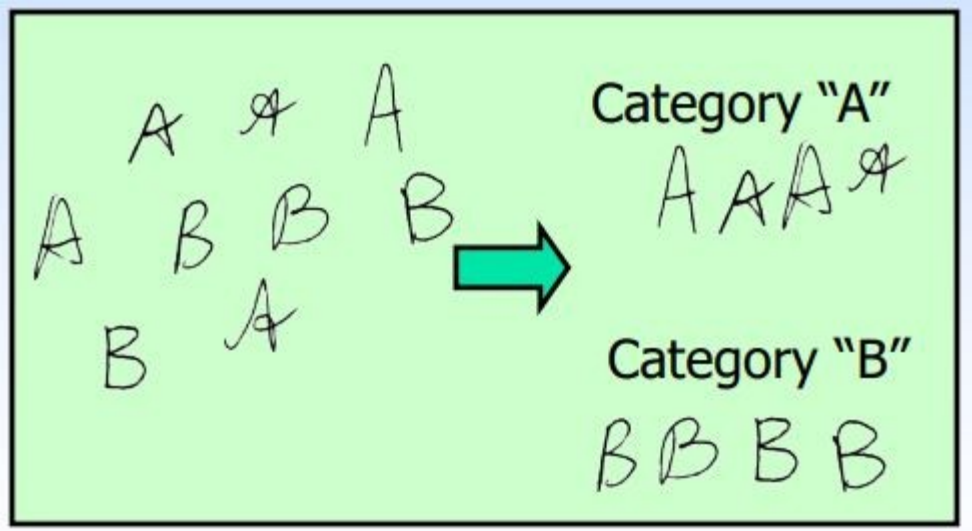
Postnet Bar Code

Data Trend

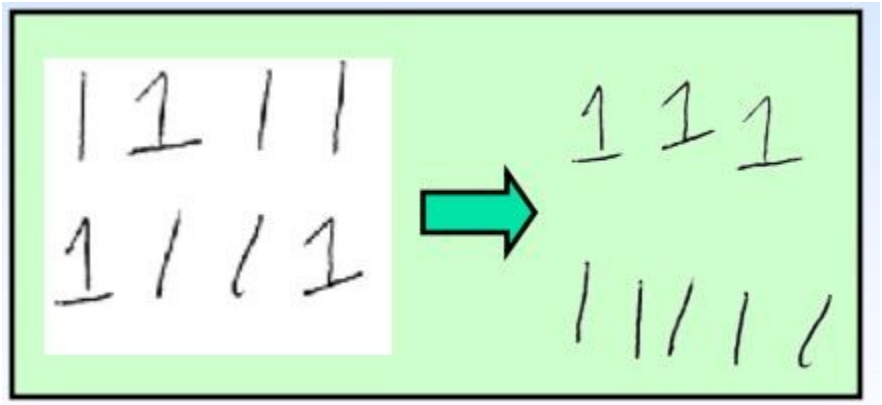
- Biometric pattern corresponds to an object.
- Hand gesture pattern corresponds to an event.

Recognition

- Identification of a pattern as a member of a category (class) we already know or we are familiar with.
  - Classification(known categories)



- Clustering(learning categories)



Pattern Recognition : Definition

- The act of taking as input sensed data (measurements) and taking an action based on the “category” or “class” of the pattern.
- Theory, algorithms, systems to put patterns into categories.
- Classification of noisy or complex data.
- Relate perceived pattern to previously perceived patterns.
- Assign an unknown pattern to one of the several known categories(or classes).

- The real power of human thinking is based on recognizing patterns. The better computers get at ‘pattern recognition’, the more human like they will come.

THANK YOU