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Data Mining and Warehousing

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DIGITAL LEARNING CONTENT

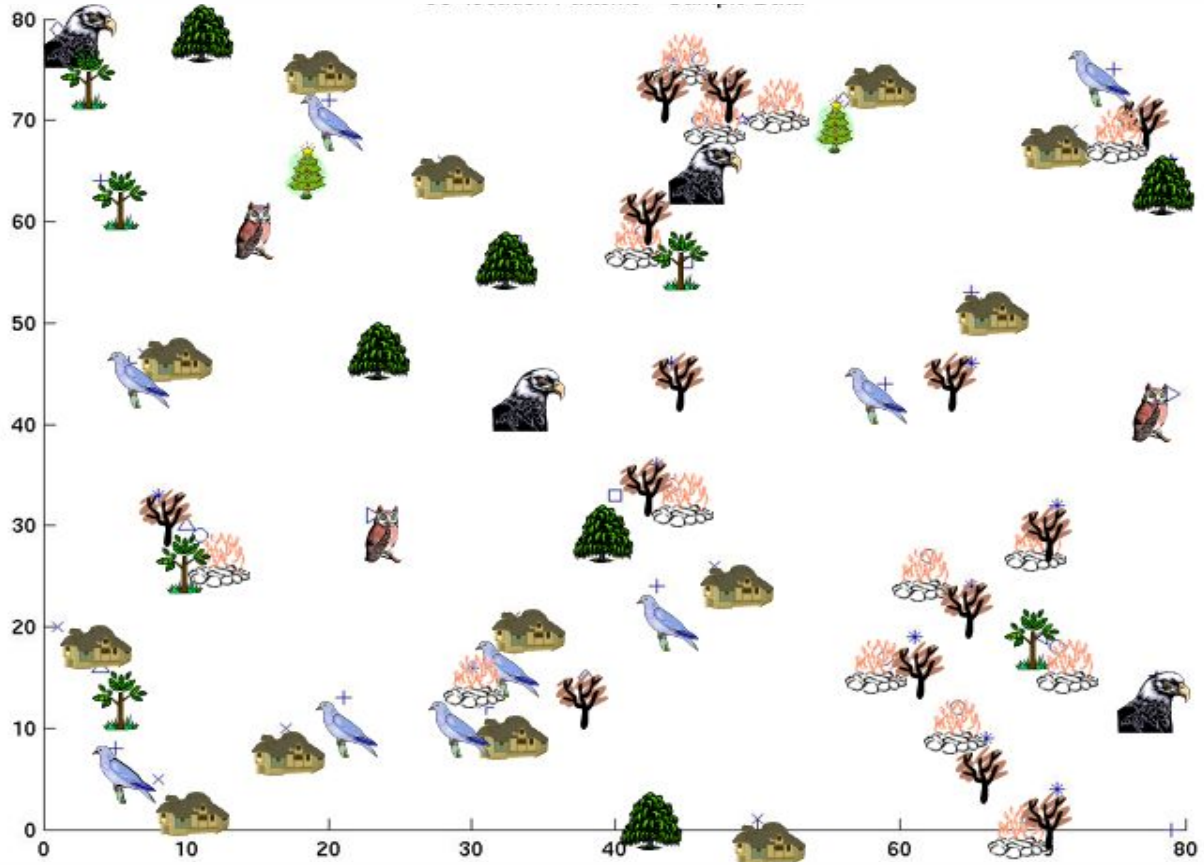
CHAPTER - 8

Applications

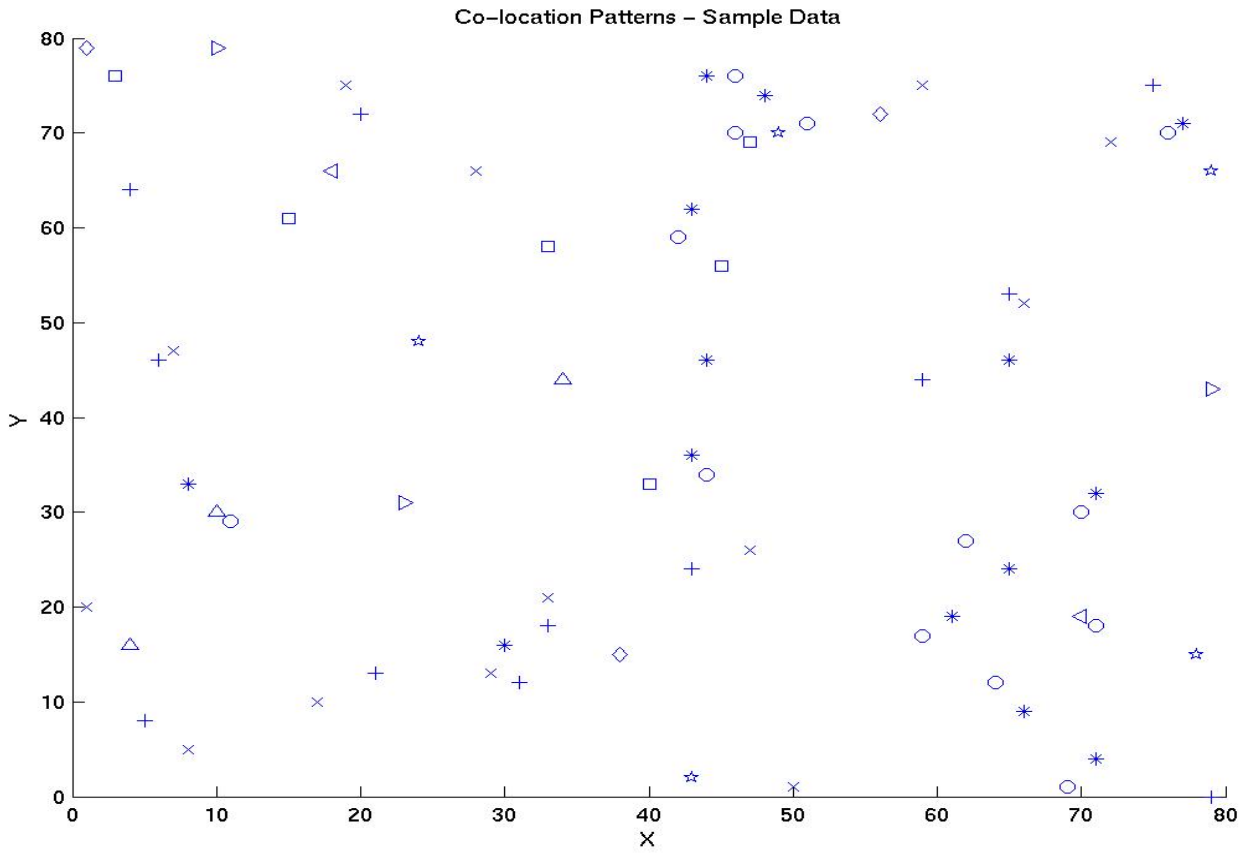
Introduction to spatial mining

- Application of data mining for spatial models.
- Makes use of geographical analysis.
- Analysts use geographical or spatial information generating business intelligence.
- It requires specific techniques and resources to get the geographical data into relevant and useful formats.
- The task is to search for spatial patterns.

Introduction to spatial mining



Introduction to spatial mining



Introduction to spatial mining

- Spatial data is associated with geographic locations such as cities etc.
- A spatial database is optimized to store and query data representing objects.
- These are the objects which are defined in a geometric space.
- **Global Positioning Systems or GPS** and **Geographic Information Systems or GIS** are used to record information on to maps.

Example: A road map is a visualization of geographic information.

A road map is a 2-dimensional object which contains points, lines, and polygons that can represent cities, roads, and political boundaries such as states or provinces.

Introduction to spatial mining

- In general, spatial data can be of two types −

  Vector data: Represented as discrete points, lines and polygons
  Example: Maps, graph

  Raster data: Represented as a matrix of square cells.
  Example: Satellite image

Introduction to multimedia mining

- Multimedia refers to data in form of audio, video, image, graphics, speech, text, document, and hypertext.
- Multimedia mining refers to mining of image, text and video.
- Various methods consist of
  - Similarity search
  - Multidimensional analysis
  - Classification and prediction
  - Association mining

Introduction to temporal mining

- Time-ordered data e.g., computer network traffic, web logs, sales transactions, weather/climate, stock market, telephone calls, etc.
- Require repeated measurements.
- Data mining methods require modification to handle temporal relationships before, after, during, in summer, whenever X happens.
- Time-ordered data contribute to prediction - what is the likelihood of an event, given the preceding history of events e.g., failure of parts in an electro-mechanical system
- Time-ordered data often link certain events to specific patterns of temporal behavior e.g., network intrusion break-ins.

Introduction to web mining

- Automatic discovery and extract information from web documents and services.

- Different domain from where the information can be retrieved are, from server logs and web browser activity tracking, web mining: web activity.
- Various categories are :
  - Web content Mining
  - Web structure Mining
  - Web usage Mining

Introduction to text mining

- Similar to text analytics, it's a way to retrieve high quality information from text.
- Majority of the available data in unstructured format.
- Its vital to develop algorithms for retrieval of useful and interesting information from huge corpus.
- Various areas covering text mining are
  - Information Retrieval
  - Natural Language Processing

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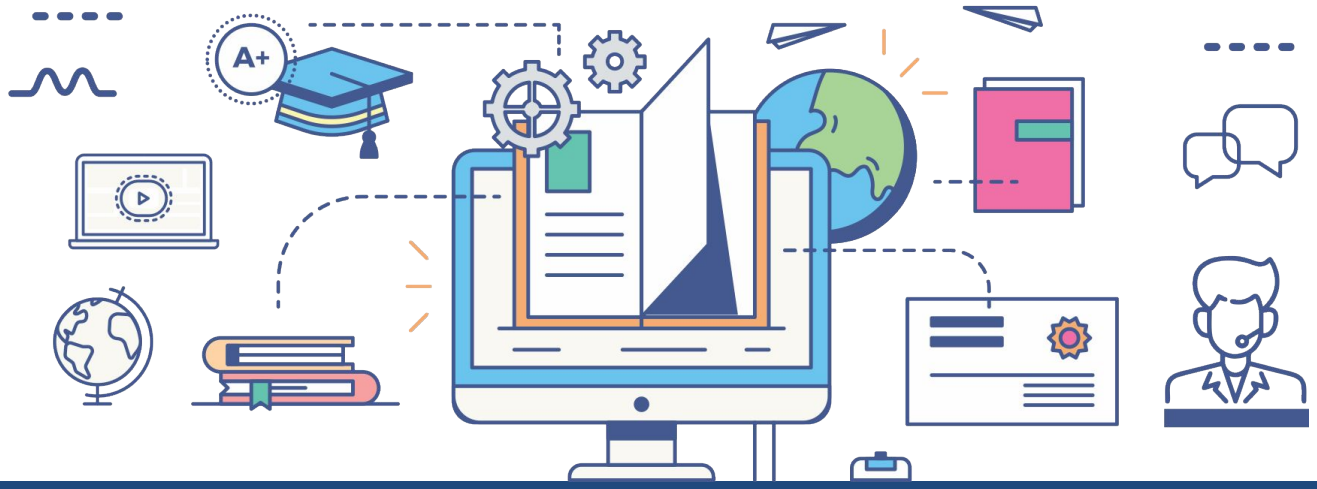

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