SNS COLLEGE OF TECHNOLOGY

Coimbatore-37.
An Autonomous Institution

COURSE NAME : 19CSE311- Data Visualization

TITLE: VISUAL ANALY - NETWORKS AND GRAPHS

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Networks and Graphs

- A **network** refers to an object composed of elements and relationships or connections between those elements.

- **Network analysis** is a collection of techniques for examining the **relationships** between entities, and depicting the **structure** of those relationships. Network analysis spans a number of domains, including social networks, bibliometrics, epidemiology, bioinformatics, complex systems, and text analysis.

- **Graph theory** provides the formal basis for network analysis, across domains, and provides a common language for describing the structure of networks.

- **Network visualization** involves the visualization of the relationships (edges or links) between data elements (nodes).

Network Visualization and Analysis Programming Libraries

- Programming Language

- Network Visualization and Analysis Library

Python:

- NetworkX is a Python package for the creation, manipulation, and study of the structure, dynamics, and functions of complex networks.

- python-igraph is a Python connector to the igraph collection of network analysis tools.

R:

- igraph is an R connector to the igraph collection of network analysis tools.

- visNetwork is an R package for interactive network visualization, built on the vis.js Javascript library.

Different types of charts and graphs

- With multiple types of data visualizations to choose from, it is best to familiarize yourself with the nuances of each type.

- This will help you understand which visualization best suits your dataset so you can boost engagement when you are telling your data story

1. Line charts

- A line chart connects distinct data points through straight lines. Its best use case is to illuminate trends, patterns, and variable changes.

2. Bar charts

- A bar chart visually represents data using rectangular bars or columns.

- Here, the length of each bar corresponds proportionally to its value.

- You can present these bars horizontally or vertically.

- A horizontal bar chart is best to use when the text on the x-axis of a vertical bar chart is lengthy, meaning it would have to be presented diagonally—or even worse, cut off—to fit within the visualization.

3. Scatter plots

- Scatter plots are types of visualization that show a collection of data points 'scattered' around the graph.

- The data points can be evenly or unevenly distributed.

4. Pie charts

- A common but limited type of visualization is the pie chart.

- It is a circular, statistical graphic that divides data into slices.

- Each slice represents a percentage or proportion of the whole.