Topic for the class-Heat Map

Unit _3 : Title-Descriptive statistics

Date & Time : 2.9.24 11.00 AM – 11.50 AM

Dr. Bhramaramba Ravi

Professor

Department of Computer Science and Engineering

GITAM School of Technology (GST)

Visakhapatnam – 530045

Email: **bravi@gitam.edu**

Unit3-syllabus

- **UNIT 3 Descriptive statistics 9 hours, P - 2 hours**
- Measures of Central Tendency – Measures of Variation – Quartiles and Percentiles –

  Moments – Skewness and Kurtosis. Exploratory Data Analytics Descriptive Statistics – Mean,

  Standard Deviation, Skewness and Kurtosis – Box Plots – Pivot Table – Heat Map – Correlation Statistics – ANOVA, Random variable, Variance, covariance, and correlation- Linear transformations of random variables, Regression.
- https://www.coursera.org/learn/data-visualization-r

What is a heat map?

- A **heat map** (or heatmap) is a two-dimensional data visualization technique that represents the magnitude of individual values within a dataset as colors.
- The variation in color can be achieved through different hues or intensities, allowing viewers to quickly grasp complex data relationships and patterns.

Types of heat maps

- There are two main types of heat maps: **spatial heat maps** and **grid heat maps**.

1. **Spatial Heat Maps**: These display the magnitude of spatial phenomena as color overlaid on a geographical map. For example, temperature variations across a region might be depicted with a gradient from blue (cold) to red (hot).

2. **Grid Heat Maps**: These represent data in a two-dimensional matrix format, where each axis corresponds to categories, and the color indicates the magnitude of some measurement related to those categories. Grid heat maps can further be categorized into:

    - **Clustered Heat Maps**: These show how values cluster together based on certain traits.
    - **Correlograms**: A specific type of clustered heat map that displays interactions between traits using a triangular matrix.

Uses of heat maps

- Heat maps have diverse applications across various fields due to their ability to simplify complex datasets into visually appealing formats:

- **Business Analysis**: Companies use heat maps for performance analysis and identifying areas needing improvement.

- **Web Analytics**: They help visualize user behavior on websites, such as mouse movements, clicks, and scrolling patterns.

- **Biology and Bioinformatics**: Used for visualizing gene expression data or other biological datasets.

- **Financial Analysis**: They assist in tracking market trends and asset performance over time.

- **Geographical Visualization**: Heat maps illustrate geographic distributions of data points, helping users identify areas of interest or concern.

Color schemes in heat maps

- Choosing an appropriate color scheme is crucial for effective communication through heat maps. Common schemes include:

- **Grayscale Heat Maps**, which use shades of gray to represent values.

- **Rainbow Color Schemes**, which utilize multiple colors but may lead to misinterpretations if not carefully selected.

- It is essential to consider audience accessibility when selecting colors, particularly for individuals with color vision deficiencies.

- In summary, heat maps serve as powerful tools for visualizing complex data sets across various domains by representing values through color gradients, thereby facilitating easier interpretation and analysis.

THANK YOU