R18

Code No: 156FA

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year II Semester Examinations, March - 2024

DATA VISUALIZATION TECHNIQUES

(Computer Science and Engineering – Data Science)

Time: 3 Hours **Max. Marks: 75**

Note: i) Question paper consists of Part A, Part B.
ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.
iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A

(25 Marks)

1.a)	Define categorical data.	[2]
b)	List the challenges of visualizing streaming data in real-time.	[3]
c)	Why is understanding historical perspective crucial in visualization design?	[2]
d)	How do visual variables contribute to effective data representation?	[3]
e)	What is the primary focus of spatial data visualization?	[2]
f)	Differentiate between dynamic data visualization and static data visualization.	[3]
g)	Define interaction control.	[2]
h)	Write a short note on extended text visualizations.	[3]
i)	What role does reasoning play in virtualization design?	[2]
j)	List some emerging trends in virtualization research.	[3]

PART – B

(50 Marks)

2.a) Describe the significance of understanding the relationship between visualization and other fields.
b) Explain how different types of data affect the choice of visualization techniques. [5+5]

OR

3.a) Describe the steps involved in cleaning and preparing data for visualization.
b) Analyze the impact of data sets on the effectiveness of visualization techniques. [5+5]

4. Discuss the various stages involved in the process of visualization and their significance in data analysis and communication. [10]

OR

5.a) Explain Gibson's Affordance theory.
b) Describe the model of perceptual processing. [5+5]

6.a) Elaborate on the process of combining visualization techniques and its impact on understanding complex spatial data.
b) Discuss the key issues in visualizing line data in geospatial contexts. [5+5]

OR

7.a) Discuss the significance of combining different visualization techniques in handling complex multivariate data sets.
b) Describe how trees are utilized to represent hierarchical structures in data visualization. [5+5]

8. Explain the different types of interaction techniques, including screen space, object-space, data space, and attribute space, providing examples of each. [10]

OR

9.a) Describe in detail the components and characteristics of interaction operands and spaces within the context of text and document visualization.

b) Explain the functionality and utility of the vector space model in representing textual data. [5+5]

10. Explain the following:
a) Issues of system design evaluation
b) Problems in designing effective visualizations. [5+5]

OR

11. Explain the impact of cognitive load on user interaction with virtualized data and suggest strategies for mitigating cognitive overload. [10]

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