

Supplementary document for StuGPTViz

A. Sample tasks for each type:

1 -- Concept Remember:

Question 1	0 pts
Please select the correct answers for the following questions:	
1). Edge Bundling is used to: <input type="text" value="[Select]"/>	
2). What is the primary purpose of the 'Force-directed Model' in clutter reduction? <input type="text" value="[Select]"/>	
3). What is the primary benefit of incorporating 'Focus + Overview' techniques in a visualization tool: <input checked="" type="text" value="[Select]"/>	
<div>To reduce the rendering time of visualizations</div> <div>To increase the aesthetic appeal of the visualization</div> <div>To create a more immersive 3D experience</div> <div>To allow detailed examination while maintaining context</div>	

2 -- Concept Understanding:

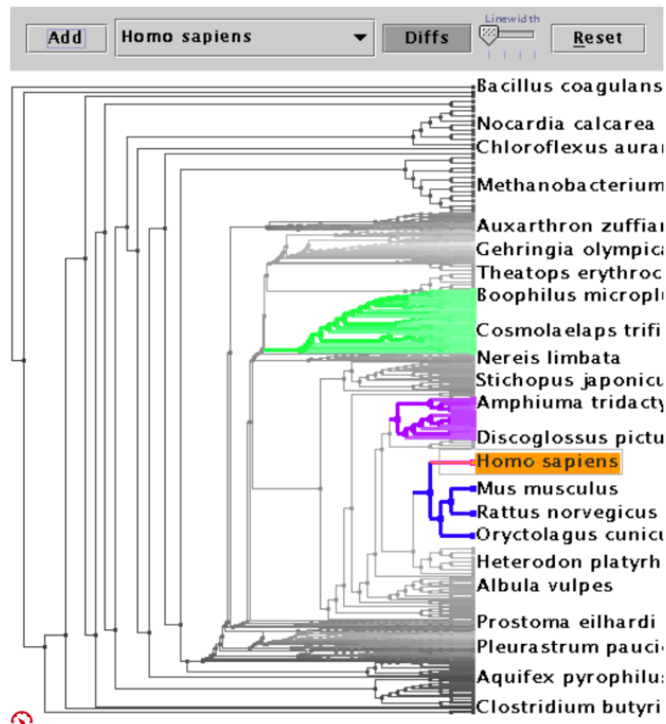
Question 1	0 pts
Please select the correct answers for the following questions:	
1). Which statement best describes the purpose of dimension reduction systems in multidimensional visual analysis? <input type="text" value="[Select]"/>	
A. To enhance the color schemes and visual encodings used in visual representations.	
B. To increase the dimensions of data for detailed analysis.	
C. To project multidimensional data into lower dimensions while preserving relationships for explorative analysis.	
D. To categorize data into predefined clusters without analysis.	

3 -- Concept Application:

Question 1

0 pts

Below is the 'TreeJuxtaposer' visualization, a system designed to support the task of **showing the path between two nodes of interest** in a large tree consisting of several hundred thousand nodes. Please use the most suitable terms under the 'What-Why-How' framework to finish the description of the main visualization tasks in this design.



What:

Tree type dataset to show the path between two nodes of interest.

Why:

The need of high-level task is [Select] .

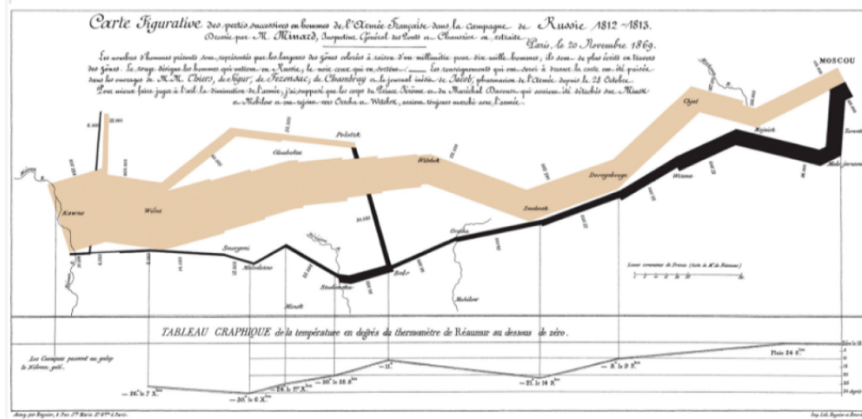
The need of middle-level search task is [Select] .

The need of low-level query task is [Select] .

4 -- Visualization Analysis:

For each of the 2 charts following, you will identify the **marks** and the **channels** used to encode the data. For each chart, you'll finish a mapping either answers the visual channels or the marks used here.

- Visual channels used?
 - Channel X encodes attribute Y
- Marks used?
 - Mark of type X encodes data Y



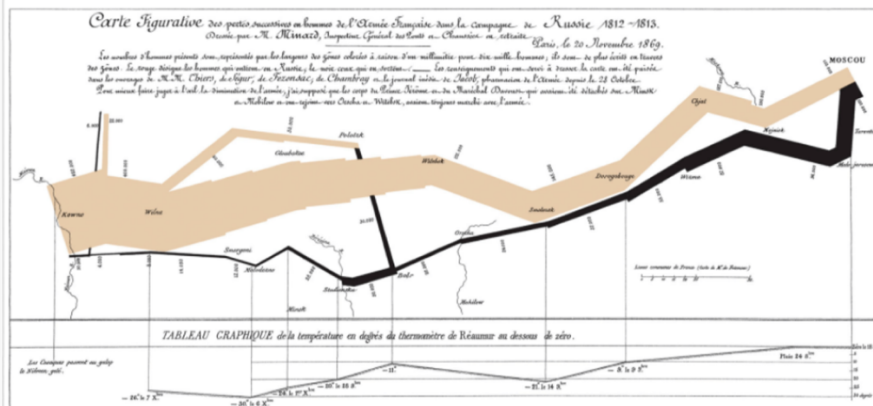
5 -- Visualization Evaluation:

Question 2

0 pts

Please evaluate each visualization in previous question with **Design Criteria** (e.g., Expressiveness, Effectiveness, ...).

Visualization A:



6 -- Visualization Design (Create):

Question 2

0 pts

Please design a visualization system that can help you better understand your undergraduate academic life. Follow the 'What-Why-How' framework to describe the following information for your visualization:

1. Describe the choice of data source(s), data type(s), and data attribute(s) for your visualization.
2. Using the Task Analysis Framework, describe what the high-level Analyze tasks are. What are the corresponding middle-level Search tasks and low-level Query tasks in your visualization?
3. Describe your proposed design. Which visual encoding will you use, which manipulations (interactions) will your visualization support, and which facet will your visualization use?
4. List the visualization design 'Rules of Thumb' considered in your design.

Self Learning:

In today's lecture, we've primarily covered these essential topics:

Multidimensional Data Visualization, Item packing techniques, Statistical embedding techniques, Clutter Reduction.

Now you're required to do some **self-exploration** on these essential topics

B. The detailed questions and statistics of the questionnaire:

1). Did you use ChatGPT in today's in-class exercises to help you learn data visualization? [Answer_2]

A. Yes

B. No

A	35 respondents	73 %	<div><div></div></div> ✓
B	12 respondents	25 %	<div><div></div></div>
No Answer	1 respondent	2 %	<div><div></div></div>

2). Generally, how frequently do you use ChatGPT in these in-class exercises to help you learn data visualization? [Answer_1]

A. Almost every time

B. Sometimes

C. Very rarely

D. Never

A	19 respondents	40 %	<div><div></div></div> ✓
B	25 respondents	52 %	<div><div></div></div>
C	3 respondents	6 %	<div><div></div></div>
D		0 %	<div><div></div></div>
No Answer	1 respondent	2 %	<div><div></div></div>

3). Generally, do you enjoy learning data visualization with the help of ChatGPT compared to the traditional class format like today's? [Answer_3]

- A. Very enjoyable
- B. Somewhat enjoyable
- C. Neutral
- D. Somewhat not enjoyable
- E. Very unenjoyable

A	26 respondents	54 %	<div></div> ✓
B	18 respondents	38 %	<div></div>
C	3 respondents	6 %	<div></div>
D		0 %	<div></div>
E		0 %	<div></div>
No Answer	1 respondent	2 %	<div></div>

C. The raw conversation for student alisa “CJ” in Case 1:



Help me identify the blank nodes which associated Analytical Stages (1 to 5) in the process. First, what are the stages in exploration loop?



The stages in the exploration loop of the visual analytics process are: 1. Data acquisition and integration 2. Data preprocessing 3. Data transformation and representation 4. Visual exploration and analysis 5. Knowledge discovery and generation 6. Visualization-based decision making and dissemination
Here are the analytical stages associated with each of the exploration loop stages: 1. Data acquisition and integration: In this stage, the focus is on



You need to choose from hypothesis, insight, finding, action and knowledge.



Sure, here are the terms that correspond to each blank node: 1. Data acquisition and integration: Hypothesis 2. Data preprocessing: Finding 3. Data transformation and representation: Insight 4. Visual exploration and analysis: Knowledge 5. Knowledge discovery and generation: Action



Can you show me the updated Visual Analytics Pipeline (named the knowledge generation model)



Sure, here is the updated Visual Analytics Pipeline, also known as the Knowledge Generation Model:

1. Data acquisition and integration: In this stage, relevant data is identified and collected from various sources and integrated into a single dataset.
2. Data preprocessing: In this stage, the data is cleaned, filtered, and transformed to prepare it for analysis.
3. Data transformation and representation: In this stage, the data is transformed into a format that can be used by visualization tools. Appropriate visual representations are selected for the data.
4. Visual exploration and analysis: In this stage, visualization tools are used to explore and analyze the data, identify patterns and trends, and generate hypotheses.
5. Knowledge discovery and generation: In this stage, the hypotheses generated in the previous stage are refined and validated, using statistical analysis or other methods. Insights are gained and knowledge is generated.
6. Visualization-based decision making and dissemination: In this stage, the insights gained from the analysis are used to make informed decisions and communicate the results to stakeholders.

This framework provides a structured approach to the visual analytics process, helping users to effectively analyze and gain insights from complex data.



What are the stages in the verification loop? You need to choose from hypothesis, insight, finding, action and knowledge.



The stages in the verification loop of the visual analytics process are: 1.

Hypothesis testing: In this stage, the hypotheses generated in the knowledge generation stage are tested and validated. 2. Insight validation: In this stage, the insights gained from the analysis are validated and verified. 3. Finding confirmation: In this stage, the findings generated in the exploration loop are confirmed and validated. 4.

Action verification: In this stage, the actions taken based on the insights and findings are verified to ensure they are effective. 5. Knowledge consolidation: In this stage, the knowledge generated from the analysis is consolidated and integrated with existing knowledge. The terms that correspond to each stage are: 1. Hypothesis testing: Hypothesis 2. Insight validation: Insight 3. Finding confirmation: Finding 4. Action verification: Action 5. Knowledge consolidation: Knowledge