CSCE 5320 Scientific Data Visualization
ICE-10

Interaction Techniques

Use Python for this lab. You can import any python library for this lab. Please use your own data for this lab, you can use the data set from your previous labs. The data should contain multiple quantitative values or timeline.

1. **Making Interactive Visualizations with Python (50 points)**

   1.1) Please show the standard scatter plot which you are going to add interaction, submit the screenshot of the graph, and describe your data/graph including all labels and legends.

   1.2) Which library/ package are you going to use for interactive visualization in this lab? Simply describe them (such as Matplotlib, Plotly, Altair, etc.).

   1.3) Create a selection object on your graph and bound it to one of the legends. Submit a screenshot of the graph which contains the selection object and a screenshot of your code (commented properly).

   1.4) Create multiple plots which contains one interactive legend. Submit a screenshot of the multiple plots and a screenshot of your code (commented properly). Add a selection object on the multiple plots, submit a screenshot of the selected multiple plots and a screenshot of your code (commented properly). Describe differences between multiple plots. Analysis the data based on the plots.

2. **Panning and Zooming (30 points)**

   2.1) Panning on the graph. Submit a screenshot of the graph and a screenshot of your code (commented properly).

   2.2) Zoom in and out on the graph. Submit two screenshots of the graph and a screenshot of your code (commented properly).

   2.3) What are the pros and cons of Panning and Zooming? Give sufficient explanation with examples.

3. **Adding Tooltips (20 points)**

   3.1) Adding at least two different tooltips on your graph. Submit a screenshot of the graph and a screenshot of your code (commented properly).

   3.2) Why you are choosing these elements/ labels as tooltips. What are the advantages with or without the tooltips?

Rubric ICE 10

Q1: Making Interactive Visualizations with Python (50 points)

Criteria	Ratings		Pts
1.1) Screenshots of the graph is provided, and the data description / explanation is matching the data.	**10 pts**	**0 pts**	5 for the screenshot 5 pts for explanation
	Full Marks	**No Marks**	
1.2) Answer the question.	**10 pts**	**0 pts**	10 pts
	Full Marks	**No Marks**	
1.3) Screenshots of Code and the graph are provided, and the code should be properly commented with an explanation.	**10 pts**	**0 pts**	5 for the screenshot 5 pts for explanation
	Full Marks	**No Marks**	
1.4) Two Screenshots of the graph and code are provided, and the code should be properly commented with an explanation. Analysis the graph.	**20 pts**	**0 pts**	15 for the screenshots 5 pts for answering the question
	Full Marks	**No Marks**	

Q2: Panning and Zooming (30 points)

Criteria	Ratings		Pts
2.1) Screenshots of Code and the graph are provided, and the code should be properly commented with an explanation.	**10 pts**	**0 pts**	5 pts for chart 5 pts for code screenshots and code explanation
	Full Marks	**No Marks**	
2.2) Screenshots of Code and the graph are provided, and the code should be properly commented with an explanation.	**15 pts**	**0 pts**	5 pts for each plot 5 pts for code screenshots and code explanation
	Full Marks	**No Marks**	

2.3) Answer the question	**5 pts**	**0 pts**	5 pts
	Full Marks	**No Marks**	

Q3: **Adding Tooltips (20 points)**

Criteria	Ratings		Pts
3.1) Screenshots of Code and the graph are provided, and the code should be properly commented with an explanation.	**15 pts**	**0 pts**	10 pts for the graph 5 pts for code screenshots and code explanation
	Full Marks	**No Marks**	
3.2) Answer the question	**5 pts**	**0 pts**	5 pts
	Full Marks	**No Marks**	

Plagiarism Rules:

• No scores to the questions which are completely plagiarized i.e., same screenshots captured, or almost same wordings for an explanation.

• If the similarity score for the explanation part (mainly analysis) is >= 50% and is plagiarized with other students or any source, deduct 30-50% off from the obtained score.

• If it is between 30-50%, deduct 20-30% from the obtained score.

• For all others, it should be according to the

ICE Submission Guidelines

1. ICE Submission is individual.
2. ICE code (if there is any) has to be properly commented.
3. The documentation should include the screenshots of your code/results.
4. Provide the explanation of the exercise as per your understanding.
5. The similarity score for your document should be less than 15%.
6. Submit the documentation (.pdf/.doc) with visual images of the data with explanation.
7. Submission after the deadline is considered as late submission.