School of Software and Electrical Engineering

COS30045 Data Visualisation

Data Visualisation Project Process Book

Introduction

The Project Process Book is where you document the development of your data visualisation design process. The Project Process Book is the major piece of assessment that should demonstrate that you have achieved the unit learning outcomes. The following is a template to help you structure your Process Book. Assessment Criteria are detailed towards the end of this document. Please read them carefully.

A 50% penalty applied to this item if visualisation does not address this semester's Project Topic. Please check with your tutor if you are unsure if your visualisation addresses the Project Topic before doing any major work.

Visualisation Process Book

Title Page

Includes:

- descriptive title (e.g., 'Data Visualisation Project' is not acceptable)
- link to Mercury hosted website (must be on title page)
- team name and student names and IDs
- tutorial day and time
- year and semester
- word count

Table of Contents

1 Introduction

1.1 Background and Motivation

Who will use, or be interested in, this visualisation (i.e., users)? What kind of tasks will they want to do? Why is it important?

1.2 Visualisation Purpose

What questions will the user be able to answer with your visualisation? List the possible benefits of the completed visualisation.

1.3 Project Schedule

Make sure that you plan your work so that you can avoid a big rush right before the final project deadline. Write this in terms of weekly deadlines.

2 Data

2.1 Data Source

From where and how are you collecting your data? Provide a link to your data sources. What type of data set is it (e.g., table, network, field)? What are the attributes in your data set and what type of data are the values (i.e., categorial, ordinal, interval, ratio/quantitative)? Is there any data in the set that will not be included in your visualisation? Why?

NOTE: Make sure that the data can be used to answer the questions outlined in Section 1.2.

2.2 Data Processing

Do you expect to do substantial data cleanup? What quantities do you plan to derive from your data? How will data processing be implemented? Will you be deriving any variables?

Describe clean up process that was implemented. Explanation and calculation of derived variables (if used).

3 Requirements

3.1 Must-Have Features

These are features without which you would consider your project to be a failure. Were you able to deliver all the promised features? If not, explain why.

3.2 Optional Features

Those features which you consider would be nice to have, but not critical. Were you able to deliver any of these extra features?

4 Visualisation Design

How will you display your data? Provide some general ideas that you have for the visualisation design. Include sketches of your design. Include at lease 2-3 alternative ideas for your visualisation. Describe and justify your choice of visual encoding and idioms. Show the evolution of your design. How has it progressed? Justify the visualisation idioms you have chosen to represent your data.

Description (including screen shots) and explanation of final design.

[NOTE 1: You are encouraged to provide your own structure to this section (i.e., section headings etc).

NOTE 2: You MUST show evidence of iterative design (i.e., sketches of alternative and preliminary designs).]

Include screenshots of final design.

5 Validation [optional - Bonus Points]

Test your visualisation with users and report the results.

6 Conclusion

Provide a summary of the project and what you learnt from doing it.

References

References consulted (blogs, books, academic papers, discussion/help forums - for both design and programming)

Assignment Assessment Criteria (also see Canvas)

Criteria	Needs Improvement	Good	Very Good
Context and Requirements (5 pts) A visualisation rarely stands on its own. Give your reader some context so they can understand the audience and purpose of the evaluation. Assume your reader knows very little about the topic of your visualisation.	One or more of the following: No, or very limited context provided (e.g., data domain, background, motivation/purpose, audience etc). Lack of consistency between: - context - project objectives - the requirements and design For example, data set not appropriate for questions asked.	Background context is provided allowing the reader to get an understanding of the audience and purpose of the visualisation. Good consistency between: - context - project objectives - the requirements and design. Requirements clearly expressed.	Background context is provided allowing the reader to get an understanding of the audience and purpose of the visualisation. Any specialist terms are defined and/or explained. Excellent consistency between: - context - project objectives - the requirements and design. Requirements are clear and unambiguous. References used to establish context.

Data Elements (5 pts) As Data Scientist you will need to become familiar with a variety of ways to display data and the terminology used to describe the different elements of a visualisation. For example, we will look at how well you; - appropriately identify and describe data types in the data set and how they might be represented graphically.	One or more of the following: Data is not described or discussed. Demonstrates some confusion about the different data types (ie.. what data is qualitative or quantitative). Attempts to use the inappropriate encoding principles for the data type. Data source is not referenced.	Identifies the data used in the visualisation and the way in which the data is to be encoded (e.g., The rated smelliness of each type of cheese (e.g., Gorgonzola, Emmental, Roquefort , Saint Agur, Feta etc) will be represented by different shades of blue). Data clean up is to specified. Derived variables if used are explained. Data source is referenced appropriately (i.e., web address).	Describes in detail the data used in the visualisation and the encoding principles used to represent the data (e.g., The rated smelliness of each type of cheese (e.g., Gorgonzola, Emmental, Roquefort , Saint Agur, Feta etc) is treated as quantitative data and encoded using colour saturation (i.e., different shades of blue). The deeper the shade, the more smelly the cheese.). Demonstrates an excellent understanding of how data is presented graphically. Data clean up is specified and derived variables if used are clearly explained. Data source is referenced appropriately.
Data Visualisation (10 pts) The same data may be visualised in a number of different ways. However, some ways will be better than others and may depend on the type of data and context. In this part of the assessment we will look at your design process. For example, we will look at how well you applied; - data visualisation guidelines - appropriate visual elements depending on data type - the context of the visualisation	One or more of the following: No, or minimal attempt, to relate or apply design decisions to visualisation guidelines or data encoding principles. No evidence of iterative design (i.e., trying multiple different ways to display data). Demonstrates poor understanding of the context, or does not address the context.	Good understanding of visualisation context (e.g., audience and purpose) and how it relates to your visualisation design choices. Discusses the appropriateness of using visual elements for different types of data. Good awareness of data visualisation guidelines. Shows evidence of iterative design (i.e., evolution of design through a number of versions). Describes the type of visualisation (e.g., A sunburst diagram was used to classify the different types of cheeses (e.g., type of milk, hardness, etc).	Excellent understanding of visualisation context and insightful analysis of how to apply visualisation design principles to get your message across. Demonstrates the ability to effectively compare and contrast different visualisations based on a range of dimensions (e.g., guidelines, data types, context). Clearly demonstrates how the visualisation will be tailored towards a specific audience and purpose. Contains numerous sketches and or screenshots showing design alternatives and evolution of design. Creative professional level response to the assignment task.
Validation (Bonus 5pts) OPTIONAL Test visualisation with Users and report the results.	User testing not done.	User Testing done and results reported.	High quality user test conducted and results and recommendations reported.

Presentation (4 pts) Visual presentation is an important part of making your document appear authoritative and have people take what you have to say seriously. Make your document usable by using good visual design principles (or a template available with most modern word processors)!	Poor visual presentation. For example, inconsistent font styles, font changes within format styles. Poorly formatted heading styles that lack contrast. No title page or title page missing information. No table of contents or table of contents missing page numbers. No page numbers.	Good visual presentation. Consistent font styles. Appropriate use of style to indicate heading levels. Title page with required information including word count. Page numbers. Readable font and at least 1.3 line spacing.	Very professional visual presentation. Appropriate use of visual design principles to indicate heading levels. Title page with required information including word count. Page numbers. Readable font and at least 1.3 line spacing.
Written Expression (5 pts) No matter how good your ideas, if you can not communicate them effectively they are wasted on your audience. In this part of the assessment we are looking at how well you can communicate your ideas and create a piece of writing that convinces your reader that your conclusions and/or recommendations are well founded.	One or more of the following: Difficult to read or follow. Ideas do not link up well within and/or between paragraphs (e.g., swaps topics within or between paragraphs without transitional sentences to guide the reader from one idea to the next). Poor English expression (e.g., lacks proper sentence and/or paragraph construction). Difficult for reader to determine meaning. This level of writing would not be acceptable at a professional level.	Assignment is mostly well organised generally demonstrates a clear flow from one idea to the next. Transitional sentences are used to connect major ideas and guide reader through the paper. Follows basic report structure (e.g., executive summary introduction, body, conclusion etc) Language is mainly fluent. May contain some grammatical and/or spelling errors. This level of writing would be acceptable at a professional level but could do with some improvement.	Assignment is well organised, ideas and arguments flow naturally and logically. Easy to read and follow. Language is fluent. Grammar and spelling accurate. This level of writing would be acceptable at a professional level.
Academic Integrity (2 pts) Everyone likes to be 'paid' for work they do. In academic and professional environments, payment is not just about money, but also acknowledgment of ideas. If you use ideas or words from other writers or researchers you must 'pay' them by citing their original work. Failing to cite work from other authors will earn you a FAIL in this assignment. You will also FAIL this assignment if you use the words of other students in your assignment, or you give your words to other students to use.	One or more of the following: An effort is made to cite scholarly ideas, but citation style is poor and does not follow appropriate style guidelines (e.g., Harvard). Work that Turnitin detects as the same as other published work or student work will not be graded. Typically this means an overall FAIL grade will be given when Turnitin Report indicates more than 20-30% similarity with: - other published work and/or - work submitted by other students You may also be found to have committed Academic Poor Practice or Misconduct. You can be excluded from the university for Academic Misconduct.	Scholarly ideas are mostly cited correctly using appropriate style guide (e.g. Harvard) or, consistent style is used, but not requested style (i.e., Harvard). Work from other sources is appropriately acknowledged. Less than 20-30% similarity with other sources.	Scholarly ideas are cited correctly using appropriate style guide (e.g. Harvard). Work from other sources is appropriately acknowledged. Less than 20-30% similarity with other sources.

Note 1: Similarities with other students will not be detected and reported by Turnitin until AFTER due date. Do not share references, resources or text with other students. Protect your work with adequate computer security. **If you provide work to another student you will be penalised the same as a student who uses your work. You are not being a good friend if you share your work with others. Both of you will FAIL and get an official penalty notice and face possible exclusion from the University.**

Acknowledgment:

These assignment requirements are based on project developed for use in the Visualisation unit run at Harvard/University of Utah.