COMP3736 Information Visualization (2022-23)

Coursework 2: Evaluation exercise (worth 50% of your final module grade)

Introduction

The objective of this coursework is to assess your ability to perform a user evaluation of visualizations. You need to do this coursework in the groups that are defined on Minerva. A group comprises a maximum of four people.

Detailed specification

For this coursework, you must do the following. First, design a laboratory experiment to compare maps vs. bar charts for comparing the plastic pollution of different countries. You need to choose an experiment task that is relevant (you should get some good ideas for a task if you do some background research into visualizations of plastic pollution), and which participants may answer by clicking on specific parts of a visualization or pressing keys on a keyboard. You may use either a within or between participants design.

Second, develop software to run the experiment. You may use any language and visualization library (e.g., Matplotlib). The software should present 10 trials for each chart type to a participant, blank the screen for 1 second between trials (i.e., remove one chart before the next is displayed), automatically generate the data for each chart (i.e., combine random number generation with appropriate parameters for your experiment task), and record participants' answers (correct vs. wrong) and response times.

Third, run the experiment with 10 participants. For each trial record, the response time and whether or not the answer was correct. Do not collect any personal data from participants. The example information sheet explains how to gain participants' consent.

Fourth, use t-tests to analyse the error and response time results (e.g., with Excel).

Fifth, write-up the experiment in a report.

Mark breakdown

The report has a limit of six pages plus the appendix, and should be written single-spaced in an 11 pt font (or larger). The report should have the following section headings and content:

- Introduction (the experiment aim, design, task and duration) [4 marks]
- Method, subdivided into the following sections [15 marks]
    - Participants (the number, informed consent, and no payment)
    - Materials (state the language/libraries used, and describe and illustrate how the software worked)
    - Procedure (describe what each participant did, in terms of the overall procedure and each trial)
- Results (report the statistical analysis, illustrate the results and describe the findings) [15 marks]
- Conclusions [3 marks]
- Appendix: Participant information sheet [3 marks]

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Clarity of exposition is important throughout and is an aspect of every section's marks. There will also be 10 marks for presentation, which includes using the correct headings, preserving participants' anonymity, and correctly captioning/referencing figures and tables.

Do not include a bibliography.

Submission procedure & deadline

One person should make the submission on behalf of the group. The submission deadline is 10am on Thursday 15th Dec 2022. Late submissions will be penalised in accordance with departmental guidelines.

Submit one PDF file that contains: (a) a coursework header sheet that states the names and student IDs of all the group members, and (b) your report.

Optionally: Before the header sheet, insert a signed copy of the COMP3736 Information Visualization *Group Work Form* for your group. You only need to do that if the group members did not contribute equally to the coursework.

Roy Ruddle, November 2022