

Home Exam 3: User Study

In this home exam, we will focus on analyzing data that is collected in a user study.

More specifically, you will collect participants' responses to a study that explores participants' perception of interacting with a drum bot that generates grooves based on rhythms tapped interactively by the participants themselves.

The collection of these responses from participants is a collective effort that is performed in the first week of the assignment; the analysis of the results is performed in the second week and concluded with a presentation in the class.

The user study relies on collecting participants' subjective responses to a set of questions. Every participant will respond to questions from 3 different forms. They answer one of the forms once before interacting with the drumbot, they answer one of the forms 9 times, once for each interactive session with the drumbot, and one of the forms after finishing the 9 sessions with the drumbot.

On Wednesday after the first week, observations from the collection will be discussed in class and the results will be shared in form of a single CSV file containing the collected results from all participants.

You will analyze a subset of the questions that the users answered, and present your findings after the second week.

The delivery consists of a presentation suitable for projection in the classroom. The exam comprises both the presentation as delivered and your oral presentation in the classroom including the handling of questions.

Week 1: Data collection

In the user study, participants are going to interact with a drumbot that runs on a Cloud server. To conduct the study from an arbitrary computer, some local installations are required. The relevant repository, which explains the user interface as well, can be found here: <https://github.com/cerdemo/IN5060>. It is obviously important that the computer that is used for conducting the study is capable of playing audio with a decent quality.

The Github page also links to the three sets of questions (1x pre, 9x during, 1x post study) that you should ask the participants that you find.

How to go about this:

- Every attendee of the course should recruit 6 participants who perform the study. In the followup description, the course attendees are called "*the conductor*".
- Every participant should receive a brief oral introduction from the conductor into the web page where they interact with the drumbot.
- The participant should then answer the pre-form.

- After that, the participant should perform 9 interactive sessions with the drumbot:
 - For every participant, the conductor keeps a checklist of the session IDs (1-9) that have already been tested by a participant. If a participant misses a session for some reason, the conductor must fast-forward to the correct session IDs in the following permutation.
 - Each session has a duration of up to 2 minutes.
 - In each of the 9 sessions, the participants should input at least 3 tapping sequences.
 - At the end of each session, the conductor uses “pause” to prevent the sessions from terminating by timeout (If you don’t, the next session will start after timeout, advancing the permutation of the session IDs. That is not a problem, but an inconvenience.).
 - At the end of each session, the “during” form must be answered by the participant. We recommend that the conductor reads the question and fills the form on behalf of the participant.
- Finally, the participant should answer the post-form.

The responses will be collected on Wednesday, 8.November, and redistributed to everybody during the lecture session.

Week 2: The Task

The assignment limits the flexibility of your scenario somewhat, but we are still inviting you to define a motivation for your evaluation that will be based on a subset of the questions that have been handed to the participants.

We ask you to use 5 questions in your evaluation, where 3 should be taken from the set of questions asked during the study. The other 2 should be questions taken from the initial questions of the final questions. You may combine these questions or analyze them separately.

We expect that you use a one-way repeated measures ANOVA to conduct the study, including the PostHoc evaluation of different conditions. You may use variations of ANOVA and the PostHoc procedure does not have to be Tukey’s test - but if your technique is not an implementation of the ANOVA approach presented in class, you must explain it in detail.

Presentation

- Make a visual classroom representation, in the spirit of a short lecture. Select a tool such as Powerpoint or Google Slides which allows you to download and hand in complete assignments. Tools to present results more interactively (Matlab, Jupyter Notebook) are great in many contexts but not for delivery as homework. Deliver a PDF version of your presentation as well.
- The presentation must:
 - explain the goals of your analysis
 - explain which scenarios you have chosen to analyze, and how you approached the analyses

- present your results visually using ANOVA-specific tables , supported by plots that serve to illustrate the distributions
- explain the results
- explain how the plots assist you in explaining these results
- Present in the classroom.
 - The presentation that you deliver is not a report. It should be very brief (using bullets) for each requested explanation. The oral presentation in the classroom should be more detailed.
 - It is important to use statistical tools and enough samples to make your case, as real measurements always have measurement noise.

Deadline

The presentation must be sent to the lecturers through email before November 15 at 12:00 (before the course starts).

The final delivery of the assignment must be submitted on November 25, 2023.