School of Computing Science
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Ethics information: introduction script

Remote Interaction techniques using smartphone Investigation
Level 4 Individual Project 2020-2021
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As part of our research into how smartphones can be used to remotely interact with public displays by remotely controlling a display cursor, we are inviting members who are likely to use such interaction technique to take part in a study. The study comprised of completing tasks using the interaction techniques. Before deciding to take part, we ask that you read the information below.

What is the aim of the study?

The aim of this project is to gain a better understanding of remote interaction techniques using a smartphone to remotely control a display cursor. Hygiene concerns have always been associated with shared public interfaces and the current Covid-19 pandemic has drawn more attention towards hygiene risks. Thus, this project developed four remote interaction techniques that have never been compared to each other.

Why should I participate in the study?

We cannot tell how good the techniques are unless we ask those people who are likely to be using them, which is why we need to run experiments to assess performance of the techniques. Hence, we aim to find out which interaction technique can perform the best and if the techniques are suitable for implementation on a larger scale in a public scenario. To conduct this research, we have developed four experiment tasks to assess each technique across a range of input scenarios.

Who is conducting this research?

This research is being conducted by Sadya Afreen, a 4th year student of Computing Science at the University of Glasgow. This research is being supervised by Dr Euan Freeman, a lecturer at the University of Glasgow. Contact details for both the researcher and supervisor can be found at the bottom of this sheet.

What will happen during the study?

The main aim is to assess the performance of the techniques in both 2D and 3D scenarios, so one 2D task and three 3D experiment tasks were developed. You will be given the opportunity to perform all the tasks using each interaction technique remotely i.e. using your own smartphone and desktop/laptop. During the experiment, data such as task time, performance measure, error rates etc. will be collected in the background and stored on your computer in .csv format. You are requested to send the files via email at the end of the experiment. The data will allow us to examine the input performance of the techniques for both 2D and 3D interaction.

During each round, you will be asked to run the experiment file and enter the participant ID that I will provide you with. The first task that you are required to complete is a 2D Target Selection task. It is a time-based task that requires you to select randomly appearing

different sized yellow coloured targets as quickly and accurately as possible. The target selection requires only clicking on yellow targets that alternates between a yellow centred target and a random yellow target. The task is timed for one minute. The task will start with a timer once the start button is clicked. Before starting the task you can try it out a couple of times to get some practice. Once the timer sets to zero, immediately please press the stop button to finish the task. A file named 'output.txt' will be saved that is very essential and you are requested to send it over to me via email after the end of all the tasks.

The second task is a 3D Strawberry model Rotation matching task. This task is a time-based task that requires you to orient a 3D model (red strawberry) on top of a 3D template model (white strawberry) as quickly and accurately as possible. You are required to do this three times to finish the task. The timer and task will only start once the start button is clicked. Each try expires after 45 seconds. After completing each try, you MUST click on the finish checkbox to save the results and wait for the timer to expire for a new trial to start. Thus, you are required to practice it a few times without saving the result. After completing all the trials click on the stop button to finish this task and move onto the next. A file named 'output3D.txt' will be saved on your computer which is very essential and you are requested to send it over to me via email after the end of all the tasks.

The third task 3D Colour Cube Rotation task. This task is a time-based task that requires you to rotate two different colour cubes using left and right button clicks to align them according to a specific colour at each try. The left cube can be rotated by clicking the left button of the user interface on the smartphone and dragging the remote screen cursor. The right cube is rotated similarly. There is no time limit for this task, however, the task requires you to complete it as soon as possible so the performance criteria of the interaction technique can be assessed. The task will start a timer in the background once the start button is clicked. Click on the finish button to save your results after each try. You have to align the cubes for two different colours to complete the task. After completing the 2nd try, please click on the stop button to finish this task and move onto the next. Before starting the task you are required to practice it. A file named 'output3D_cube_rotation.txt' will be saved which is very essential and you are requested to send it over to me via email after the end of all the tasks.

The fourth task is a 3D Colour Cube Translation task. This task is a time-based task that requires you to translate (move) two different colour cubes using left and right button clicks to orient them on top of a transparent template at each try. The cubes can be moved using a click and drag technique with the left and right buttons visible on the smartphone screen. Each try expires after 45 seconds and you are required to complete two tries as quickly and accurately to complete the task. The task will start a timer on the side once the start button is clicked. Click on the finish button to save your results after each try. Before starting the task you are required to practice it. After completing the 2nd try, please click on the stop button to finish this task and move onto the next. A file named 'output3D_cube_translation.txt' will be saved which is very essential and you are requested to send it over to me via email after the end of all the tasks.

Each task should take around 2-3 minutes to complete. Thus, overall completing all the tasks with one interaction technique should take around 10 minutes and completing the whole experiment will take 40 minutes.

You will also be asked to complete a survey between each round i.e. after completing the tasks with one interaction technique. The survey will help gain an insight into your thoughts on the interaction techniques in general as well as help gather some feedback on the interaction experience of the techniques. The experiment will take around 40 minutes overall per participant.

Who can access the data you collect?

The data will be accessible to the project author and supervisor, as well as university staff involved in the grading of the project which this study is part of. The data will be held and presented anonymously at all times, so nobody accessing the data will be able to identify participants from the data. The data in its anonymous form may be published for use in further research. At no point will you be identifiable from this data.

You will be asked to attend a Zoom call so that I can observe you while you perform the tasks. Please ask questions if you need to and please let me know when you are finished. I will ask you some questions at the end of the experiment when you will fill a survey to rank the techniques in the order of preference. **Please remember that it is the system, not you, that is being evaluated. You are welcome to withdraw from the experiment at any time.** If you do so, then it will not be possible for you to be debriefed about the purposes of the experiment. Do you agree to taking part in this evaluation? Do you have any questions before we start?

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