INSTRUCTIONS TO REMOTELY PARTICIPATE IN THE EXPERIMENT

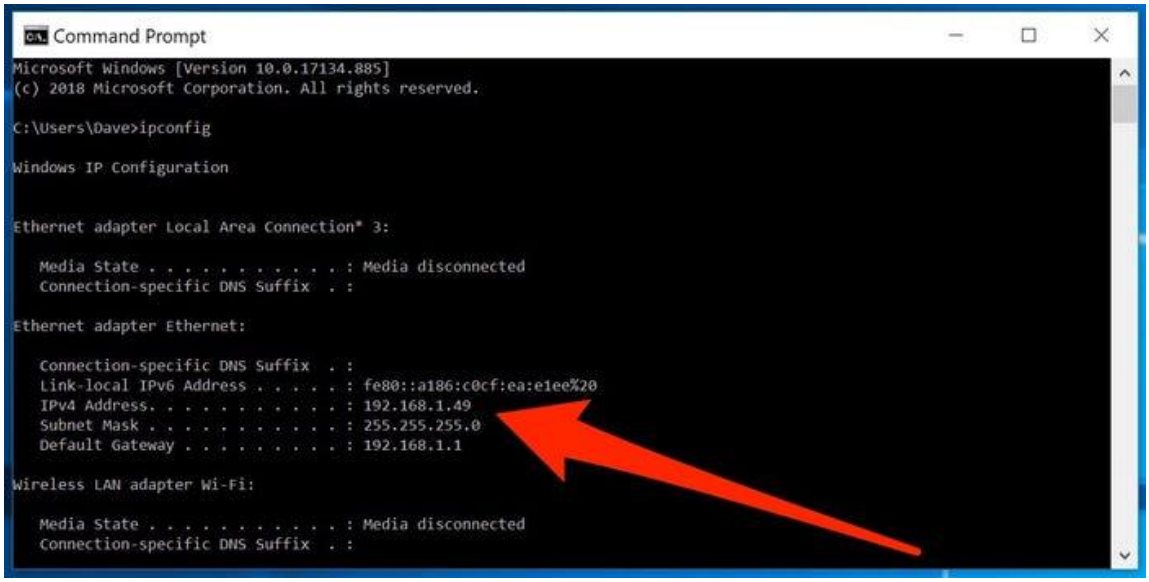
WELCOME

First of all, thank you so much for taking time out of your busy schedule to participate in this experiment. In the experiment today, you will be asked to complete four different tasks using four different interaction techniques. Thus, the experiment will take place in four rounds. Each round consists of 4 tasks that will be completed using one specific interaction technique. For the subsequent rounds, the same procedure will be applicable.

Setting up

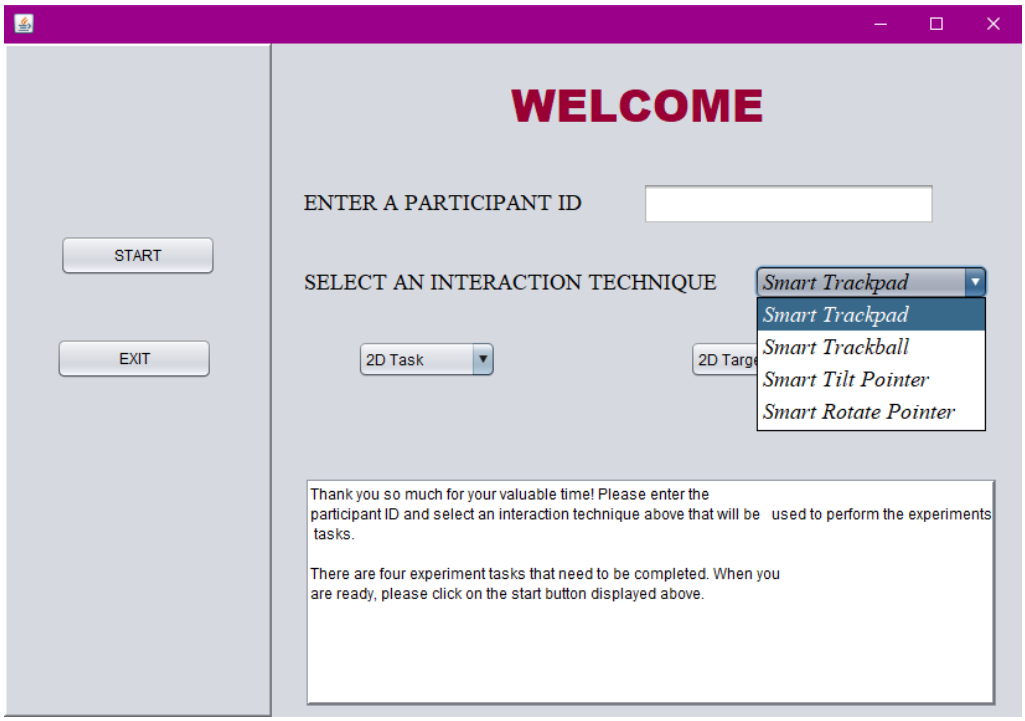
You would have received 4 .apk files and 5 .jar files that are required to complete this experiment. Each of the interaction techniques is in the form of an App. Each interaction technique requires performing different gestures using your android smartphone to control the cursor on a remote (distant) screen. The four techniques are called Smart Trackpad, Smart Trackball, Smart Tilt Pointer, and, Smart Rotate Pointer. The project has a client-server architecture and hence each interaction technique will run on your smartphone and act as a client that needs to be connected to a server. The server will be your personal desktop/laptop. A server program (.Jar file) needs to run on your computer that will accept the client.

One single server program will be run for both trackpad and trackball interaction techniques (android apps). For the other two techniques, two separate server programs need to be run on your computer. After running each interaction technique as a .apk file, the user interface would require you to enter the IP address of your computer which acts as the server for this experiment. Hence, you are required to go to open your command prompt by clicking the Start button, type "cmd," then press Enter. The Command Prompt window will open, which you can type operating system commands through. Then type "ipconfig" and press Enter. Look for the line that says "IPv4 Address," right above "Subnet Mask." If you're looking for the IP address of a home computer, the IP address will look something like 192.168.1.###, where only the last three numbers will vary from computer to computer.



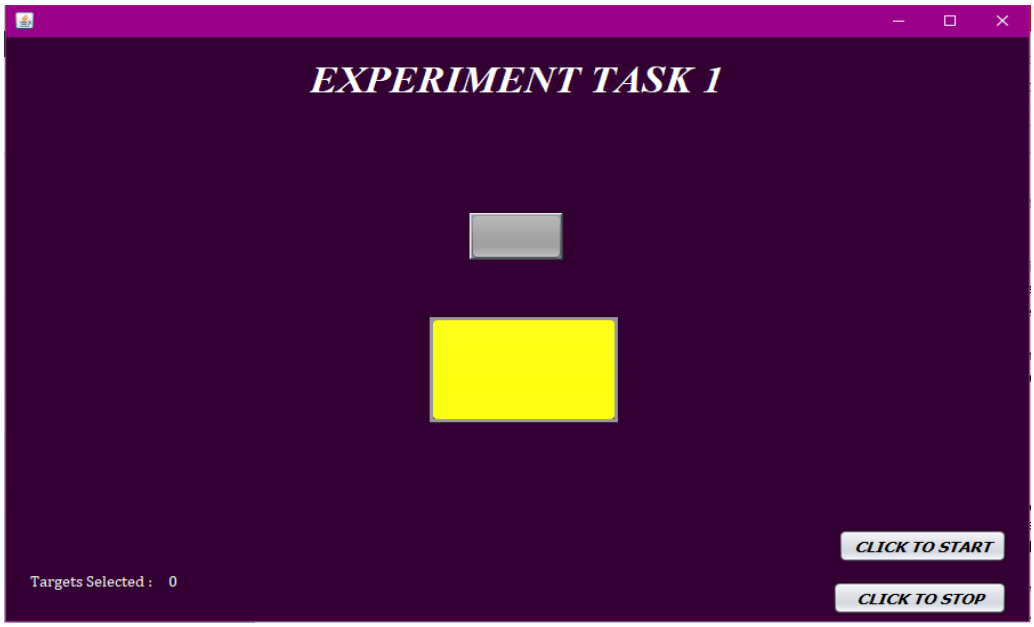
Now proceeding to the experiments tasks

All four experiments will be completed with one interaction technique first and then repeat the same process for the remaining 3 techniques. On Running the experiment jar file called 3D model.jar, a window will pop up which will require you to enter a participant id (Which will be provided to you, please enter the same), and select the technique used to experiment with a dropdown. For the other drop-down selections, select 2D Tasks and 2D Target selection at every round. Once ready, please click on the start button to start the experiment.



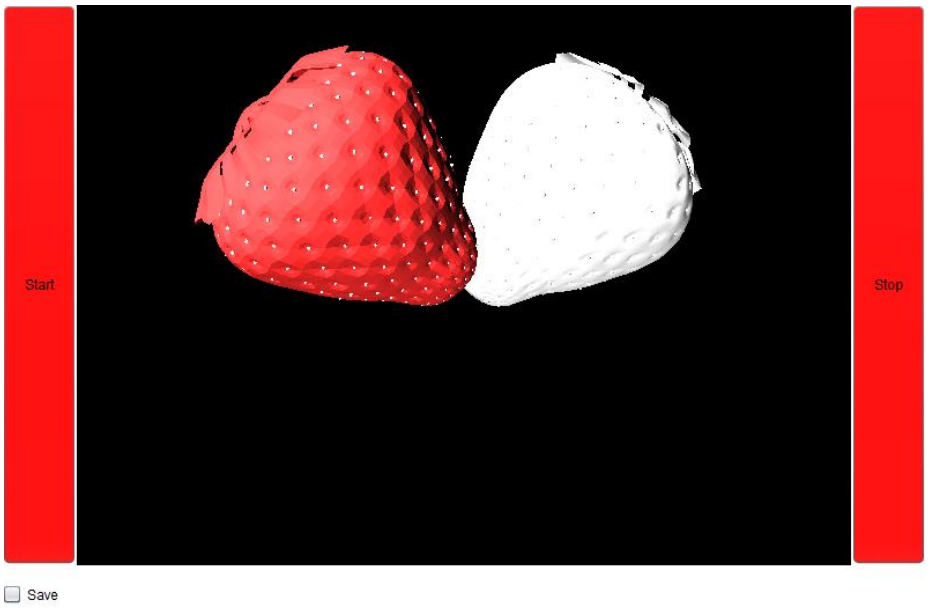
Task 1 – 2D Target Selection task

This is a time-based task that requires you to select randomly appearing different sized targets (which is yellow) 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 it is required for you to 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 will be sending it over to me via email after the end of all the tasks.



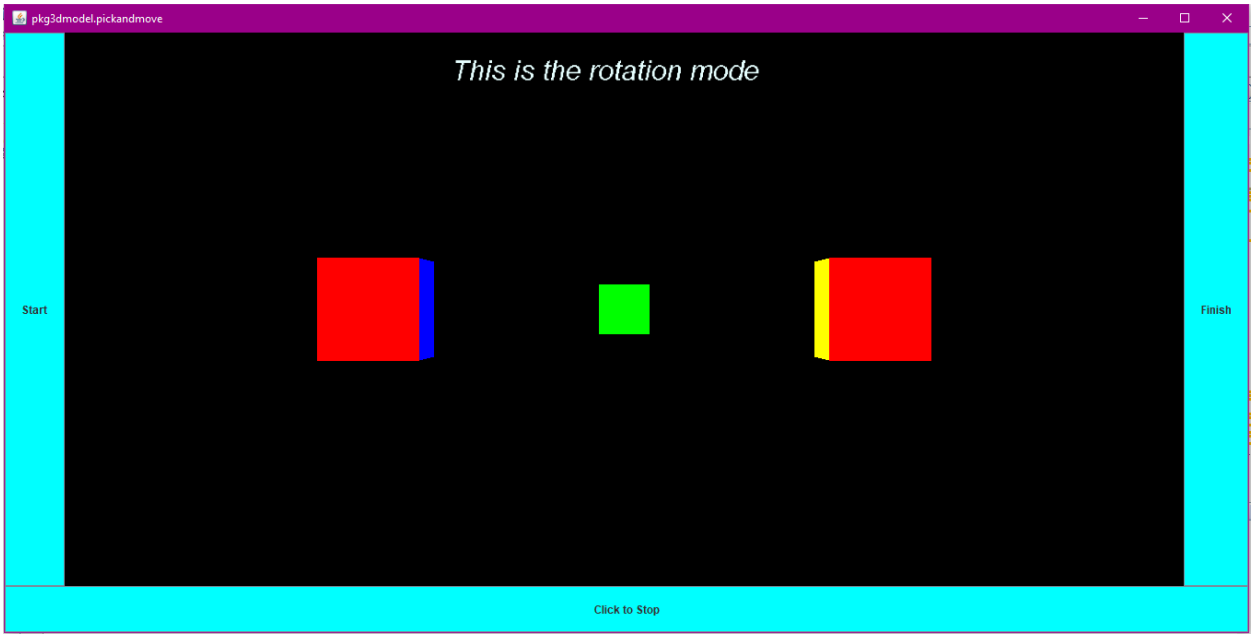
Task 2 – 3D Strawberry model Rotation task

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 and a new trial to begin. The first try will be a practice try and the results will not be considered. Thus, you are required to practice it 1 time by clicking on the start button and then check the save checkbox. Similarly, do it the second time and after completing the 3rd try, please wait till the timer reaches 0 and then click on the stop button to finish this task and move onto the next. A file named 'output3D.txt' will be which is very essential and you will be sending it over to me via email after the end of all the tasks.



Task 3 – 3D Color Cube Rotation task

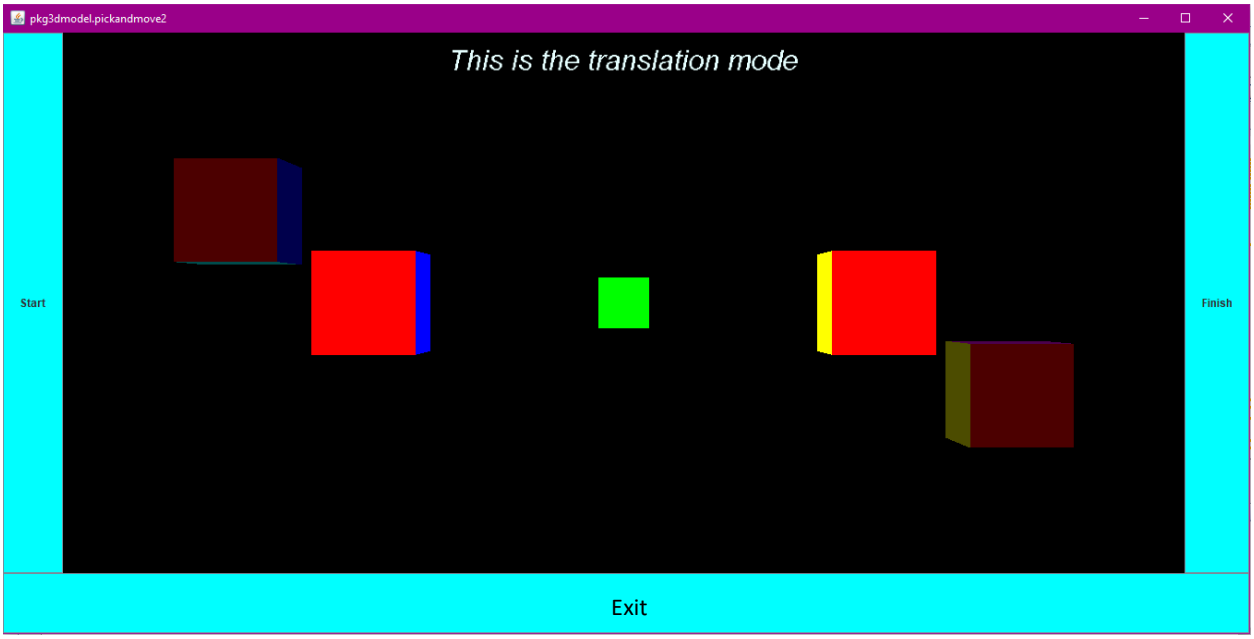
This task is a time-based task that requires you to rotate two different colour cubes using left and right button clicks to align them according to a single colour at each try. The left cube can be rotated by pressing the left button of the user interface on the smartphone. The right cube is rotated by pressing the right button. The middle cube can be rotated by pressing keys 5 and 6 on your keyboard. 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. Once the task window pops up, please click on the green area once and press the downwards arrow on your keyboard to zoom out in the 3D scene and start the task. 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 1 time by aligning it according to two different colours. A file named 'output3D_cube_rotation.txt' will be saved which is very essential and you will be sending it over to me via email after the end of all the tasks.



Task 3 – 3D Color 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 left cube can be moved by pressing the left button of the user interface on the smartphone. The right cube is moved by pressing the right button. The middle cube does not need to be moved at all. Moving the cursor anywhere within the black background by clicking on the buttons will move the cubes. 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 1 time by moving the left and

right cubes on top of the templates. 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 will be sending it over to me via email after the end of all the tasks.



After the 4th task is completed, you will exit this round of the experiment. The same process and steps done, would be required to be repeated for three more interaction techniques with just changing the interaction technique selection. However, before proceeding to the next interaction technique please click on stop connection on your app user interface to disconnect the server. Please fill a short questionnaire before proceeding to the next round.

Link to the survey -
https://docs.google.com/forms/d/e/1FAIpQLScqUV5Q4G_nnx5KVPzLPYsI0QSalzaWYZpI2qe7O4eJlQqE5Q/viewform?usp=sf_link