Remotion Experimenter Manual (v1.1)

Overview of Content

Introduction to Remotion

Hello, welcome to Remotion! This tool is a new way of replaying behavior of people visiting your mobile website or application. The software visualizes the hand movements of the user, the screen display of the phone and the pressure with which the user is gripping the phone.

This is particularly useful when conducting remote usability studies since a remote user's hand motions reflect contextual information about their surroundings, point of attention, and even signals particular emotions and intent. Imagine a scenario when a user shopping online on a mobile device proceeds to the checkout page which asks for their credit card information. Some users will put down the phone and start to look for their wallet, while others may have the cards readily available without the need to place the phone away. None of this contextual information is captured on the screen, yet the different movements resulting from how a user handles their device reveal more about the situation than what is displayed on the screen.

Remotion extracts more information about a user's performance in a remote usability testing, without the privacy or data size issues of video recordings. Remote user studies can feel as if the user is invisible but in the room manipulating the device, through a software or hardware replay. The mobile device is shown as a 3D model to simulate exactly how the device was manipulated and what was shown on the screen.

Please note that the participant for your study **must** be an Android user for you to be able to collect data from them. We have also included some sample data with the program for you to get familiar with the interface before running experiments!

Running the program

1. In the downloaded folder, you will find a file with a ".exe" extension. If you haven't yet downloaded the zip file, please download the build relevant to the operating system you are using (Mac or Windows) and unzip the file. Double-click on the .exe file to run the application.
2. When you run the program, you will first encounter a homepage with three possible directions: "Record", "Annotate", and "Analyst". "Record" allows you to collect data from your participants that you can replay and annotate using "Annotate". "Analyst" is part of our ongoing research where annotated data can be presented to analysts to see how well humans can understand orientation and pressure data. You can find more specific instructions on how to record and replay data in the following sections.

Recording Data

Remotion gives you the ability to record the capture the motion, pressure and screen display of the user when conducting remote usability studies.

How it works

To record a session, your participant would need to download the Remotion Android client. Using that, they can establish a connection with your computer to send collected data. Remotion records a single session at one time and in order to do that you (the experimenter) and the participant need to coordinate a time to conduct the study together. Although entirely remote, data is sent real-time only when both parties are present virtually to mitigate security and privacy concerns. Once a connection has been established, you would have control over when to begin and stop the recording as you can see the movements real-time on Remotion. At the end of recording, the data is saved to your computer in a folder titled "Remotion Data". A new subfolder inside this folder is created for each session and is titled with the date and time of recording. This subfolder contains the screen display as individual frames and a CSV file containing the rotations and the pressure data. In the Remotion application, you will directly be able to load in the folder corresponding to a session and the program will visualize the raw data for you.

Steps to record data

Make sure to read the following steps before beginning the data collection process:

1. Send the participant(s) the link to download and install the Remotion Android client. They can run the application by installing the .APK on their phone using the download link on the website.
2. Ensure that the participant has downloaded the application and coordinate a time with them to record the data since it is collected real-time.
3. Open the Remotion program by accessing the .exe file provided.
4. Begin by clicking on the "Record" button on the homepage.
5. You will see your local IP address displayed here. Please communicate this IP address with the participant so a connection can be established.

a. If this IP does not work, try searching for "My IP" on Google. If the IP Google provides is different than the one Unity shows, provide this IP to the participant. Before you do this, you will also have to open your router's settings so you can Port Forward ports 8010, 8050, and 8060 from your router to your recording PC. These instructions are different per router, so you will have to find the manufacturer instructions online.

✔ DESKTOP-QF10L38	Destination Ports 8010 UDP Any -> 8010	Active	☐
✔ DESKTOP-QF10L38	Destination Ports 8050 UDP Any -> 8050	Active	☐
✔ DESKTOP-QF10L38	Destination Ports 8060 UDP Any -> 8060	Active	☐

6. The participant will have to toggle the "Disconnect" button on the mobile client to begin transmitting the data.
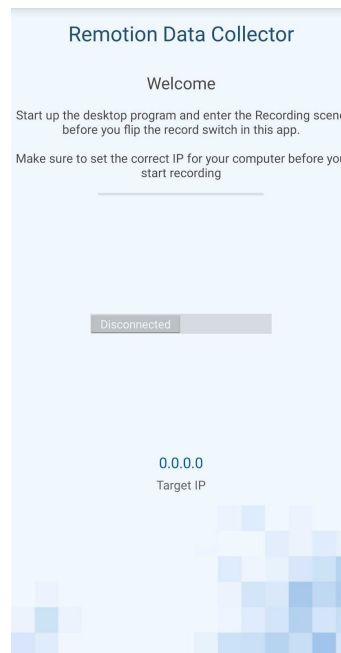
7. Once you start receiving the data, you can press the center button to begin the recording.
8. Press the same center button to stop recording at any point. This will save your session to the "Remotion Data" folder on your computer.

9. You can continue creating sessions based on different factors (e.g. tasks) and return to the homepage whenever done.
10. The participant can stop the transmission by toggling the "Connected" button back to off. This completes the process of recording the data.

FAQ

Is the mobile client available on iOS? The participant only has an iPhone.
Unfortunately, the Remotion mobile app only works on Android for now.

The participant has been unable to install the mobile app. What do I do?
Please ensure that you are accessing the correct link to download the app.

There is no time that the participant and I can make together. Is there an alternative?
For privacy reasons, Remotion can only record data once both parties have agreed to establish a connection between their devices. This is why you and the participant need to be virtually present at the same time for you to collect data.

What is an IP address and how do I communicate that with the participant?
An IP address is a numerical label assigned to your computer when it is connected to a network. Remotion displays your IP address when it is ready to establish a connection. You can share it with the participant using the same means of communication that you would for any other information.

The participant has started transmitting but I see nothing moving on my screen. What do I do?
You probably gave your local IP, please give your router IP. For more information please refer to step 5a.

How do I find where the data has been saved?
Remotion creates a new folder for each session that you record. This folder can be found in another folder titled "Remotion Data" that is created on your computer.

I thought this was a tool to replay the motions. I can only see a way to record the data here. What do I do?
For rewatching the recordings you have collected, please refer to the "Replaying Data" section outlined below.

There are firewall restrictions on my computer that are preventing data from transmitting. What do I do?
Open your firewall and give firewall permissions. In windows when you run the program for the first time it will ask for permission, then accept and give permission.

Where is the Remotion Data folder?
On Windows, it will be located in your Documents folder. On Mac OS, it will be in your Home folder.
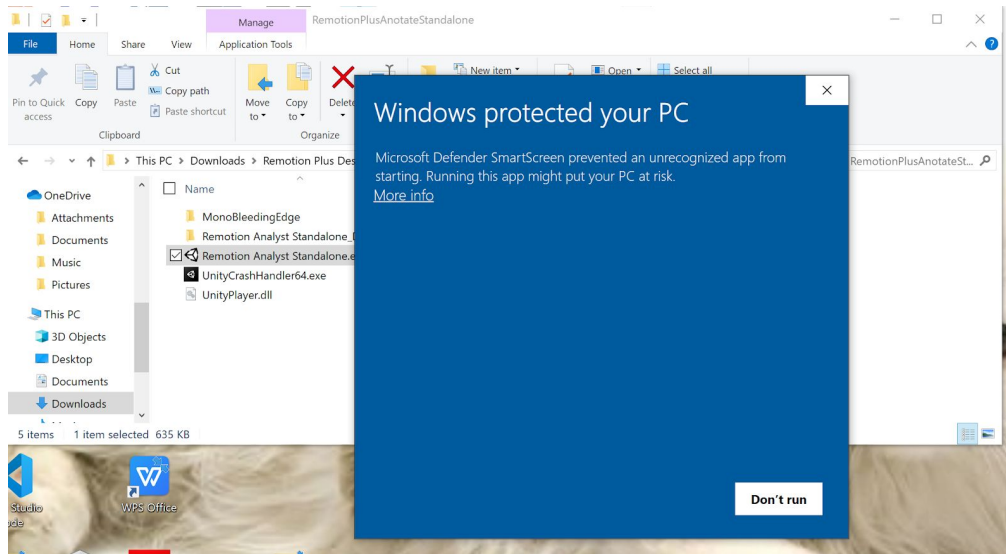
Click on More info, then click Run Anyway

Replaying Data

Remotion allows you to replay the data that you have collected unlimited times to help you not only conduct the usability studies but also be able to refer to the original data and go back to analyse it at a later time.

How it works

To replay a recording, you simply need to choose the correct data file from within the Remotion desktop application. There are three models of the phone that visualize the screen display, physical movements and pressure sensitivity of the phone respectively. You can control the playback using the Play / Pause button and through the timeline bars shown immediately underneath the screen.

On the timeline, you will also find separate bars to edit "Time", "Attention" and "Emotion." Using the "Time" bar you can edit the entire clip and trim away parts that may not be integral to the data. The Attention bar allows you to label how attentive the participant appears during a particular section of the recording. Similarly, the Emotion bar lets you label parts of the recording with your analysis of how the participant is feeling.

Once you have finished editing and annotating, you can save the file and Remotion will store your analysis in a CSV file that incorporates your labels, their timestamps and the relevant rotational and pressure information.

Steps to replay and annotate data

Make sure to read the following steps before beginning the replay process:

1. Open the Remotion program by accessing the .exe file provided.
2. Begin by clicking on the "Annotate" button on the homepage.
3. Click on the "Load Files" button and relocate the folder containing data for the relevant session.
4. Once the session has been loaded, you can play the recording to watch the session.
5. Click on any of the "New Emotion", "New Attention" or "New Time Trim" then "Edit Analysis" to edit that particular bar.
6. Once selected, you can drag the beginning and end of the sliding bar to determine the length of the segment. For Attention and Emotion, the segment indicates which aspect of the recording can be assigned that label. For a Time Trim, that segment will be the new length of this dataset.
7. You can then annotate it with a label ("Full", "Half", "None" for Attention or "Excited", "Relaxed", "Bored", "Frustrated" for Emotion) and save your annotation. For a Time Trim, you can directly save the edited timeline.
8. Don't forget to hit Save File! This creates a CSV file for you in the / Remotion Data / Analysis Answers folder containing the data and your annotations alongside it.

FAQ

I'm unable to locate the folder which contains my recordings. What do I do?
Goto folder name which ends with _Data. In that folder you can find a subfolder called Remotion Data, and here you can find all the data you created.

I accidentally trimmed the recording too short and lost important data. Is there any way I can regain that?
Trimming the file is only for the annotated data. The actual recording is still there. Just make the trim bigger and it will include the previously excluded data.

I don't understand what these Attention and Emotion bars mean. Could you please explain?
Attention is how much the person being recorded was paying attention to the phone at that time. There are three levels of attention: Low, Medium, High.

Emotions are general categories of four unique emotions that the person being recorded was feeling when using the phone at that time. There are four types of emotions: Excited, Relaxed, Bored, and Frustrated.

What is this third phone model?
The third phone model is the finger pressure and finger position indicator. See here to learn how to make your own pressure pad.

We hope you enjoy using Remotion! If you'd like to contribute to our research by providing us with data to continue improving the application, please send a zip file containing your Remotion Data to hci@brown.edu