

# HCI HW7 Interactive (Hi-fi) Prototype & Field User Test

Po-Yih Lee(pl497)  
Zhigang Wang(zw344)

**Prototype Link:** [Exploera](#)

## 1. Introduction

### • Introduce the system being evaluated

With digital eyewear devices (Google Glass/Hololens/Eyewear) becoming mainstream, Exploera will provide a novel location-based platform by using AR technology for travelers to explore nearby area and share information.

### • State the purpose and rationale of the experiment

Usability testing is the best way to understand how real users experience our product. Given the fact that our team is using prototype tools to simulate what it may look like on the eyewear devices with AR technology, usability testing is a good way to examine the feasibility and effectiveness of our product.

## 2. Method

### • Participants

#### Participant 1

A 26 years old female Cornell Tech MBA student, has experience in city backpacking for years, is open-minded to novel technologies, and conducted the experiment without compensation

#### Participant 2

A 30 years old male Cornell Tech MBA student, commutes between NY and Boston every other week and familiar with apps relevant to travelling, and conducted the experiment without compensation.

#### Participant 3

A 24 years old male Cornell Tech MEng student, likes to explore fancy restaurants in the City, and conducted the experiment without compensation.

#### Participant 4

A 24 years old male Cornell Tech MEng student, loves road trip with his family to explore nearby areas, and conducted the experiment without compensation.

#### Participant 5

A 32 years old male Cornell Tech MEng student, an experienced traveller who has been to more than 10 countries, and conducted the experiment without compensation.

- **Apparatus**

- Equipments:**

- Laptop, smart phone for recording, paper and pen for taking notes

- Place:**

- The experiment was hosted in a silent empty space.

- **Tasks**

- 1. Post a message

- The participants are expected to use voice command “post” to get into the post page, then leave a message at their location and confirm the message with the voice command “yes”.

- 2. Search Restaurants / places of interest and get the direction

- The participants are expected to use voice command “message” to get into the message page, then touch the AR bubble with content about the restaurant they are interested in to get more details about the restaurant. They should then use the voice command “get direction” to navigate themselves to the restaurant.

- 3. Find Companions

- The participants are expected to use voice command “companions” to get into the companions page, then touch the AR bubble with content about the personal profiles of nearby travellers they are interested in to make a call with them by using the voice command “call” and end the conversation by using the voice command “hang up”.

Note: All the voice commands are simulated by clicking related buttons on the left bottom corner of the screen.

**Procedure****o describe what you did and how**

- 1) We greeted the participants and asked them to sit down on the chair in front of a laptop on the desk.
- 2) The participants were told about the goal of the experiment and their voice would be recorded, and were asked to sign the consent form.
- 3) The participants were given the context and scenario about the prototype as script 1 in the Appendices.
- 4) The participants were given a short demo of the system as script 2 in the Appendices.
- 5) The participants were told to complete the three tasks in turn and the timer would start to be counted. Meanwhile, their body gestures and significant comments would be recorded during the process.

- 6) The participants were asked for feedbacks and feelings about the prototype and the experiments.

### 3. Test Measures

- **describe what you measured and why**

The measures of the experiment contains the duration of the tasks, the number of errors and number of negative terms they said.

- 1) The duration of task is positively related to the complexity of the task.
- 2) The number of errors represents the ambiguity of the workflow to complete the task.
- 3) The number of negative terms reflects the delightfulness of the participant conducting the experiment.

### 4. Results

- **Results of the tests**

Results			
Measures/Tasks(secs)	Task1	Task2	Task3
average task time	50.4	36.8	21.4
average number of errors	1.6	0.6	0.6
average number of negative terms	1	0.2	0

\* More details will be presented in the appendices

### 5. Discussion

- **what you learned from the pilot run what you might change for the “real” experiment**

In the pilot run, we tried to ask the user to complete three tasks without short demo. The participants mentioned that it is difficult to understand the relations between the buttons and the voice commands.

We also asked the user to conduct the experiment on the smart phones in the pilot run, while they suggested that it is hard to recognize the text and touch the AR bubbles since they are too small.

In the pilot run, some users would like to give some feedbacks and comments during the experiment, which results in a biased task time. In the real experiment, we explicitly asked them to give feedbacks when it was finished.

- **what you might change in your interface from these results alone**

According to the results of tests, the average value of the measures decreases through task one to task three. It reflects the familiarity of the system for the participants. In addition, the longer time of the task 1 also reflects the following change might be applied for the next version of the interface:

1. The button simulated the voice command “post” and “message” are too close, so that it seems to be considered as one “post message” command.
2. The “yes” and “no” buttons shown on the confirmation AR bubble seems to imply that the participants should touch it instead of using voice commands.

In general, the participants did a better job in the task 2. There is only one point might be changed in the next version of the interface:

1. Only one participant was confused about whether the task should be completed by using voice command “get direction” or “message”.

The participants did the best job in the task 3. However, there are a few suggestions mentioned by the participants:

1. The voice command “companions” is a loose term, it may be changed to “friends”.
2. The personal profile should provide more details about other users to make the user feel comfortable to contact other users.

In addition, there are some other feedbacks from the participant:

1. The voice command should be in plural state like “get directions”, “find companions”
2. The voice command should be a clear phrase like “post a message” instead of “post”
3. The text communication may be more appropriate than voice call in some circumstances like restaurants.

## **6. Appendices**

- **Materials**

### **Script 1:**

Imagine you are travelling in the city and wearing google glass. This prototype simulates the view you see through google glass. The view you see on the screen is what you see exactly on the google glass. The app provides a platform for travellers to

share their information with each other. You can post messages on the platform, explore the messages posted by other travellers, and contact others who left a message nearby.

### Script 2:

You have two different ways to interact with our system. First, you can use the voice command to control the system. It is simulated as buttons at the left bottom corner. Pressing the button simulates the voice control process. Second, you can touch the AR bubble in the air by clicking the object on the screen.

Now, you are going to complete three tasks separately. First, post a message on our platform. Second, explore the messages around and find the details of one restaurant and navigate yourself to the restaurant. Third, explore the users profiles nearby and make a call with the one you are interested in.

### • Raw data (i.e., entire merged critical incident logs)

Task Time			
Participants / Tasks(secs)	Task1	Task2	Task3
Participant 1	91	65	18
Participant 2	36	12	24
Participant 3	41	13	27
Participant 4	43	12	25
Participant 5	41	82	13

Number of Errors			
Participants / Tasks(secs)	Task1	Task2	Task3
Participant 1	2	0	0
Participant 2	1	0	1
Participant 3	1	0	1

Participant 4	2	1	1
Participant 5	2	2	0

Number of Negative Terms			
Participants / Tasks(secs)	Task1	Task2	Task3
Participant 1	2	1	0
Participant 2	1	0	0
Participant 3	1	0	0
Participant 4	0	0	0
Participant 5	1	0	0