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Fido Fetch

Assignment 3f: Final Report

Team

Micaela Tolliver: Program Manager
Ethan Goldman-Kirst: Web Designer
Megan Drasnin: Writer
Isaac Kuek: Usability Tester

Problem and Solution Overview

Improving dog behavior requires constant communication between the dog and the dog owner. However, not all dog owners are experienced in being able to provide adequate training to their dogs. Self-learning through literature is one approach but may be misleading since there are multiple psychological backgrounds that influence the literature. Our challenge is to create a design that encourages people that interact with dogs to be more consistent with the dog training process. In the dog training process, owners can often forget tricks, use commands inconsistently, and train inconsistently. These problems have detrimental impacts on the dog training process, making dogs more likely to forget tricks they have learned, or not perform tricks successfully. The focus of the design is on an augmented reality device, and in our context, the Microsoft HoloLens. The application that utilizes HoloLens will provide visual guidance to different types of dog commands and provide passive reminders to train consistently. The application pairs with other existing devices to allow more effective reminders, in our context, text message reminders.

Initial Paper Prototype



Task 1: Practicing a Trick

When the user launches FidoFetch for Microsoft's HoloLens, the virtual menu is displayed on the lower left-hand side of the user's field of vision. This menu includes options for: practicing tricks, setting reminders to practice in the future, and exiting the app.



Fig. 1 The virtual menu

The user wants to practice tricks with his dog. He taps on the button labeled "TRICKS." The button highlights in green as a positive feedback signal to the user.



Fig. 2 The button labeled "TRICKS" highlights in green

A list of tricks to practice is displayed to the user.



Fig. 3 The list of tricks to practice

The user chooses to practice “SIT” with his dog. The user taps on the menu item labeled “SIT.” The menu item highlights in green as a positive feedback signal to the user. After a moment, the menu slides out of view.



Fig. 4 The user taps on the menu item labeled “SIT”

The user is instructed to stand in front of his dog while holding a dog treat firmly in his dominant hand.

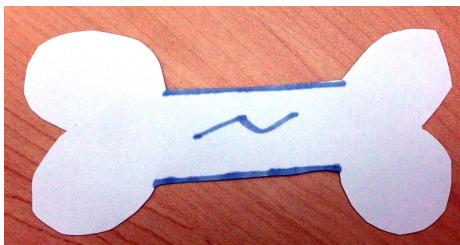


Fig. 5 A dog treat

Virtual arrows are holographically displayed around the user’s dog. The user is instructed to move his dominant hand along the arrows (while still holding the treat). The dog performs the trick correctly, so the user is instructed to give the treat to the dog.

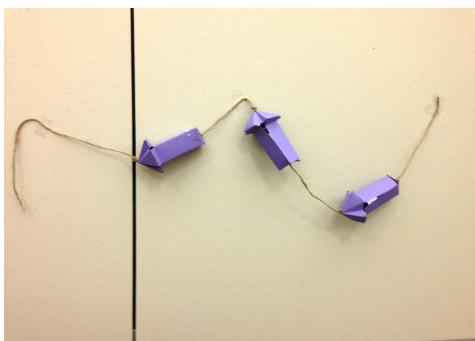


Fig. 6 Virtual arrows

Because the dog performed the trick correctly, a congratulatory panel is shown. This panel displays an encouraging message, the trick name, and a progress bar.



Fig. 7 Congratulatory panel

Task 2: Setting Reminders to Practice in the Future

When the user launches FidoFetch for Microsoft's HoloLens, the virtual menu is displayed on the lower left-hand side of the user's field of vision. This menu includes options for: practicing tricks, setting reminders to practice in the future, and exiting the app.



Fig. 1 The virtual menu

The user wants to set a reminder to practice dog tricks at a later time. He taps on the button labeled "REMINDERS." The button highlights in green as a positive feedback signal to the user.



Fig. 2 The button labeled "REMINDERS" highlights in green

A panel appears allowing the user to set a reminder for practicing dog tricks. The user can customize the time and location of the reminder via voice commands. These reminders automatically sync with the user's Microsoft Calendar app.

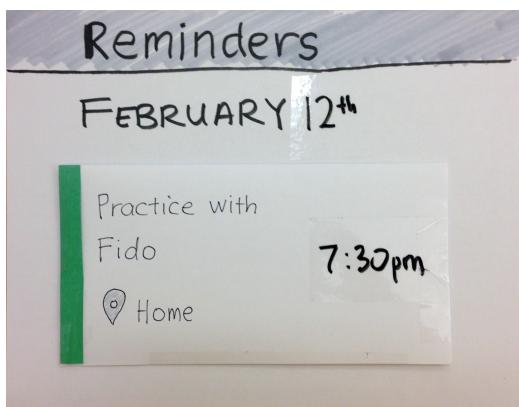


Fig. 3 The user sets a reminder time and location

Testing Process

During our initial usability tests, we would ask the participant to use a think aloud protocol while conducting the test for the following tasks:

- Since you nor your dog Fido knows the trick ‘Sit’, use the HoloLens to find the ‘Sit’ trick and practice it with Fido.
- Set up a reminder to practice the ‘Sit’ trick with Fido tomorrow evening, at 7:30pm.

Then, we would walk through the test with the participant, with typically a visual prop operator and computer script.

Over the course of usability tests, we refined our process by including more background information about the application and usage of a HoloLens. Additionally, if the participant was not familiar with the think aloud process, we would demonstrate. During our final usability test, we provided the participant with introductory information about the application and usage of Microsoft’s HoloLens. We asked the participant to use a think aloud protocol while conducting the test for the same tasks listed above. We also asked questions prior and after the usability test was conducted.

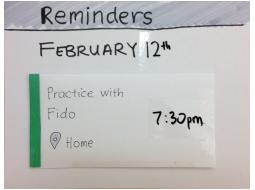
Our participants were one college student who currently did not have a dog, one dog trainer, and one college student who had a dog.

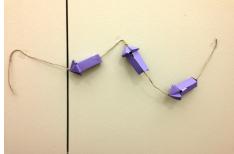
Our first usability test was conducted with a college student in his apartment. We chose this participant because he is familiar with technology and is aware of the Microsoft HoloLens. He also has previously owned a pet, though he does not currently have one. We conducted the test in his apartment because someone’s home seems like a common place where they might use this app to train their dog.

Our second usability test was conducted with a dog trainer from Petco on 45th because dog trainers are in our target audience and can provide more in-depth feedback on the training process. The dog trainer is a current dog owner and handles up to 3 - 4 dogs at once during a training session. This usability test was conducted in store with a toy dog. Dog training sessions are conducted mid-week, well after this assignment is due.

Our third usability test was conducted with another college student. We chose this participant because he has had some experience with dog training and is also familiar with Microsoft’s HoloLens. We decided to conduct this usability test outdoors, at Greenlake, in order to get a better idea of how an outdoor setting affects usability. The participant did have a dog in this particular scenario.

Testing Results

| Image | Incidents | Severity Rating | Implemented Revisions |
|---|--|--|--|
|  | <p>Participant showed that indicator for selected button should not disappear right after, but instead stay highlighted while in the specific mode.</p> <p>Violates Visibility of system status</p> | <p>2 - minor usability problem.</p> <p>This does not impact overall use but is slightly confusing.</p> | Green highlight will stay on button as long as user stays in the specific mode |
| - | User wanted to return to tricks menu | <p>3 - major usability problem; important to fix.</p> <p>It is important that the user can intuitively navigate to another desired screen at any time.</p> | An undo and back button were included in the navigation of the application.  |
|  | User could not change event location | <p>2 - minor usability problem.</p> <p>This does impact the user's experience, but is not detrimental to the user's overall experience using the app.</p> | We verbally prompt the user for the date, time, and location of the reminder. |
| - | No user feedback if trick failed | <p>5 - extreme usability problem; must fix now.</p> <p>This is a very common scenario for trainers with disobedient dogs. Users</p> |  |

| | | | |
|---|--|--|---|
| | | feedback about trick success is crucial for the app to be useful. | |
|  | User immediately understood the purpose of the 3D arrows | N/A | N/A |
|  | User did not notice tricks were scrollable | <p>1 - minor usability problem</p> <p>This problem did not severely impact the user's overall experience of the application, but was still not very intuitive and prevented the user from finding all possible tricks.</p> |  |

We considered the following revisions to our final design because of the results of our paper prototype testing and refinement.

- **Support multiple dog profile & identification**

2 out of 3 usability test participants indicated that the application should be able to identify multiple dogs at once and account for each dog's different level of trick mastery. This issue was also brought up by the class critique.

- **Undo/back buttons**

Users expressed that should errors occur, there was no clear way to undo or return to a previous step. The absence of these features affected both the trick learning process screen and the reminders screen.

- **Better trick feedback & status**

The resulting percentages after each trick was not immediately clear to usability test participants. After completion of tricks, we want users to see appropriate feedback, especially if tricks were not performed correctly. Users knew their progress only after a trick was completed, and not at the tricks menu screen.

Final Paper Prototype



Task 1: Practicing a Trick

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Fig. 4 The user taps on the menu item labeled "SIT"

The user is instructed to stand in front of his dog while holding a dog treat firmly in his dominant hand.

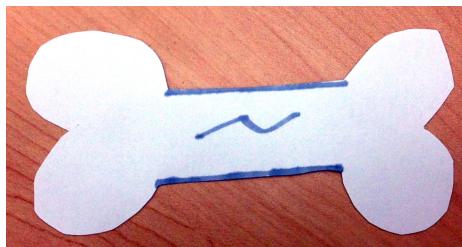


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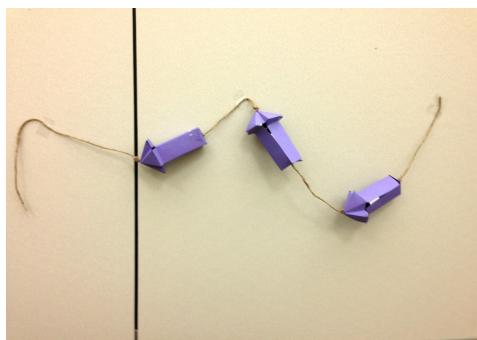


Fig. 6 Virtual arrows

Because the dog performed the trick correctly, a congratulatory panel is shown. This panel displays an encouraging message, the trick name, and a progress bar.



Fig. 7 Congratulatory panel

However, if the dog performs the trick incorrectly, the user will be prompted with a Trick Failed screen. From this screen, the user can chose to practice the trick again.

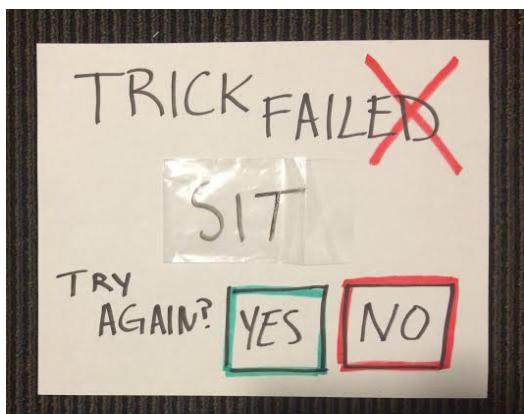


Fig. 8 Trick Failed Screen

Task 2: Setting Reminders to Practice in the Future

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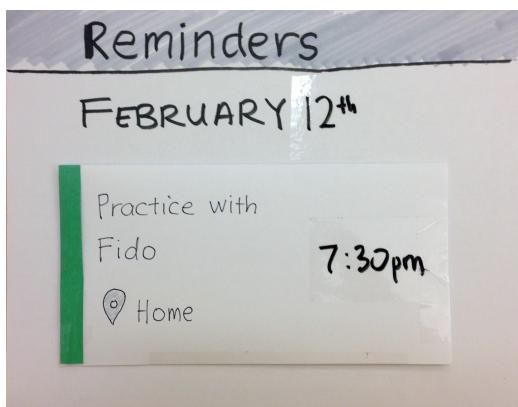


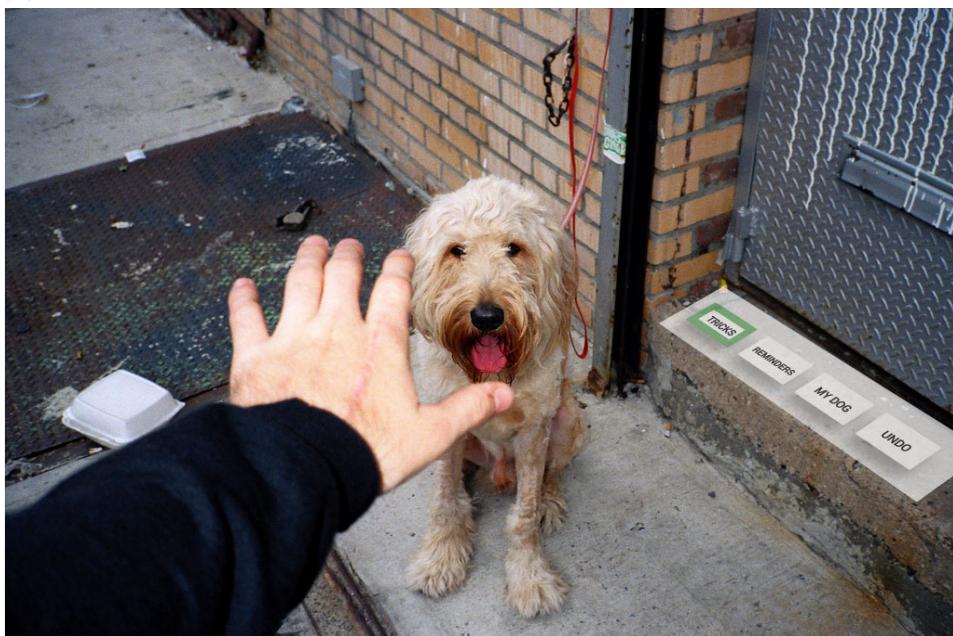
Fig. 3 The user sets a reminder time and location

Digital Mockup

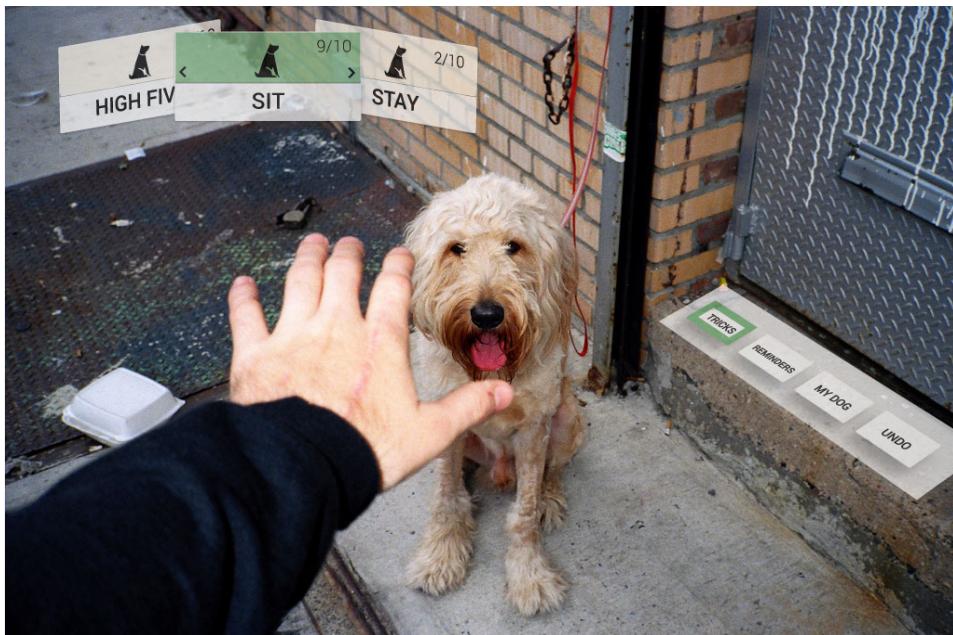


Task 1: Teach Fido the “Sit” trick

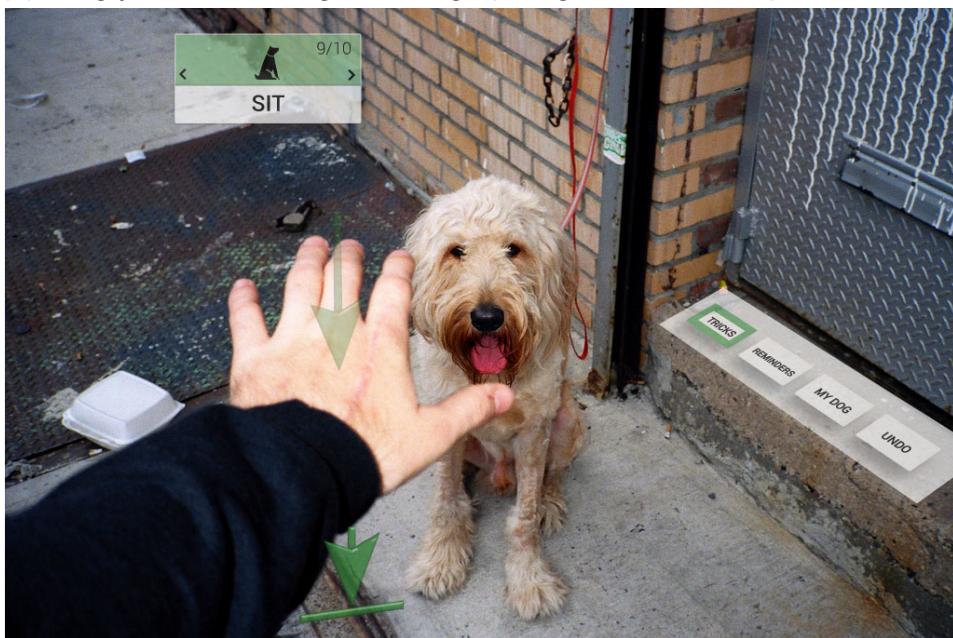
- (1) Click on the Tricks tab from the main menu



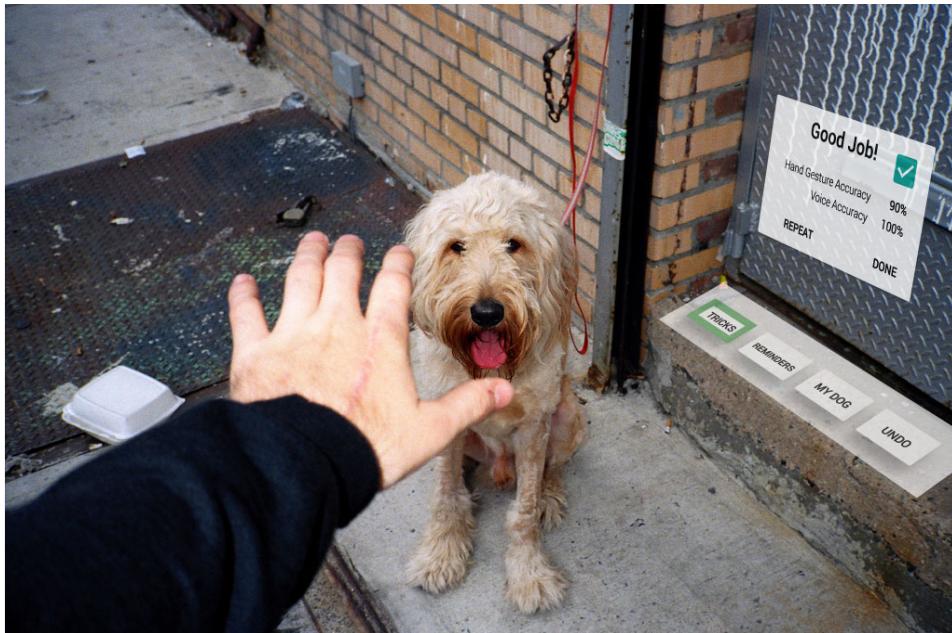
(2) Select the “Sit” trick from the overflow-style Tricks menu



(3) Drag your hand along the holographic guide arrows to perform the trick.

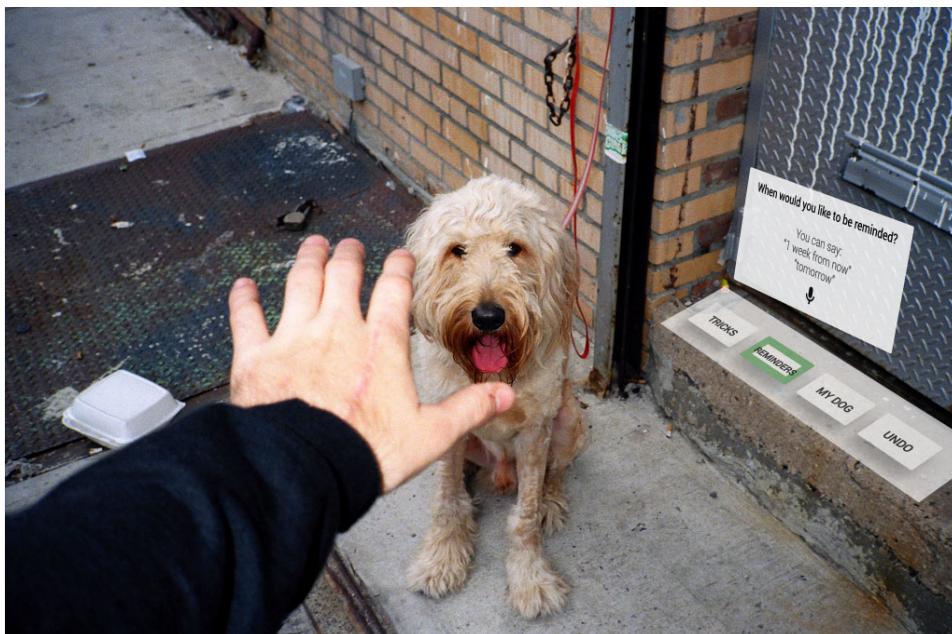


(4) Fido successfully completes the trick.

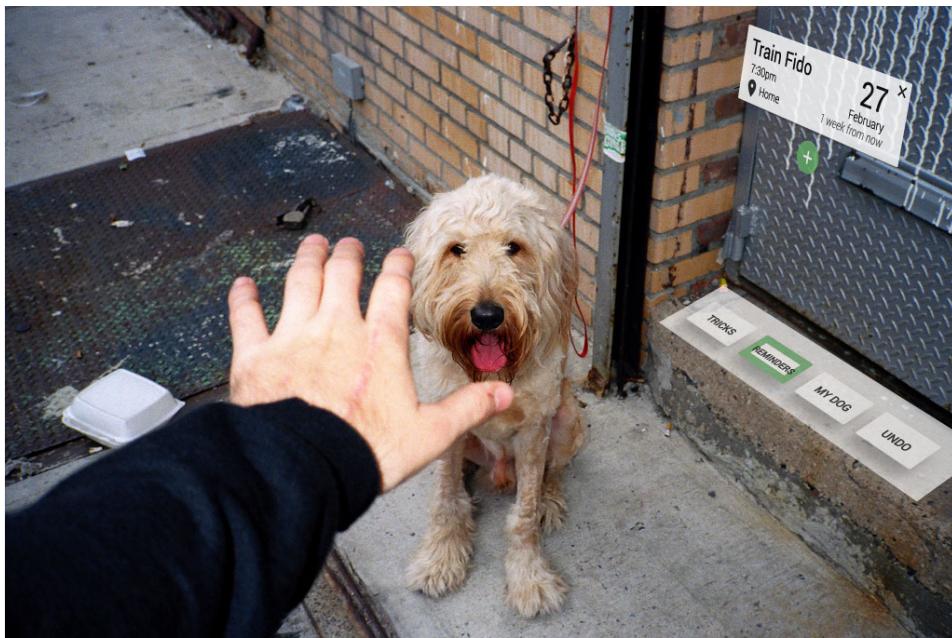


Task 2: Set reminders to practice with Fido

(1) Click on the Reminders tab from the main menu



(2) Use voice commands to set a reminder



Decisions and Changes

- For our trick menu, we changed the scroll wheel menu to icons that can be swiped to the left and right. We believe this menu will be more intuitive as some users in testing did not realize they could swipe to view more options.
- We added a “My Dog” item to the menu. This will allow a user to see stats about their dog and the tricks they know as well as changing to a different dog for owners with multiple dogs.
- In our reminders tab, we added a screen which displays all current reminders because there was no way to see this before. This way, the user can see the reminders they set as well as change or remove them.
- We added a translucent effect to the arrows to make them more intuitive to the user as to what they meant. Additionally, we added an endpoint to the arrows so the user knew when to stop their movement.

Discussion

We learned a great deal from the process of iterative design. Although our initial design was simple and easy to navigate, there were some critical usability issues: users could not change some event details, we provided no user feedback when a dog performed a trick incorrectly, and our design lacked an undo button. Because we employed an iterative design process, we were able to identify these issues and introduce fixes in the next design iteration.

Overall, this process led to a very intuitive, easily navigable, and complete design. Because our original design was focused on only the most basic functionalities of the application, it was very easy to introduce design changes throughout the design process. Additionally, because

we knew that would be able to change our design in future iterations, we were free to experiment with interesting design decisions in our initial designs. Some of these interesting design choices led to some of the best aspects of our final design.

Although the basic designs of our tasks did not change very much over the course of the design process, usability testing helped us refine some aspects of our tasks, resulting in an improved user experience. For example, our initial design did not allow users to change the locations associated with reminders. After several test users pointed out that this was a problem, we changed our reminder design to allow location customization.

As with any design, our design could have benefitted from more iterations. Although we feel that our design is very successful, there is always room for improvement. Every user test yields new, valuable user feedback that may be incorporated into future iterations.

Fortunately, we were able to collect enough user feedback to ensure that our final product was well-designed. Given more time, we would also incorporate a lot more potential tasks that we gathered during interviews and design critiques.

Appendix

Usability Test Script

Introduction

"Hello! Thank you for taking the time to participate in this testing session. Today we'll be testing a paper prototype for an augmented reality dog training application, specifically for the HoloLens glass. [Explain HoloLens if participant is not familiar with HoloLens] I will administer you a series of tasks to complete in the prototype. If you feel stuck or frustrated, feel free to ask me for help. We have found that we get a great deal of information from these informal tests if we ask people to think aloud as they work through the exercises. It may be a bit awkward at first, but it's really very easy once you get used to it. All you do is speak your thoughts as you work. If you forget to think aloud, I'll remind you to continue talking."

Ask: Would you like me to demonstrate?

[Show quick demonstration of think aloud process as you perform the task "Set an alarm for 8:30am tomorrow and label it 'New Alarm'"]

Task 1

"Since you nor your dog Fido knows the trick 'Sit', use the HoloLens to find the 'Sit' trick and practice it with Fido."

Task 2

"Set up a reminder to practice the 'Sit' trick with Fido tomorrow evening, at 7:30pm."

Measure Points of Focus

Qualitative

Observational

- Note any parts that participant was confused, or stuck

Quantitative

- Measure Time to complete:
 -
- Count navigation errors
 -
- Did they succeed?
 -
- *"From 1 - 5, 5 being the highest, how comfortable were you performing this task?"*