

*Wanderlust*

LO-FI PROTOTYPING  
AND  
PILOT USABILITY TESTING  
REPORT

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*CS147*

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## TEAM

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## INTRODUCTION AND MISSION STATEMENT

[\[Introduction\]](#)

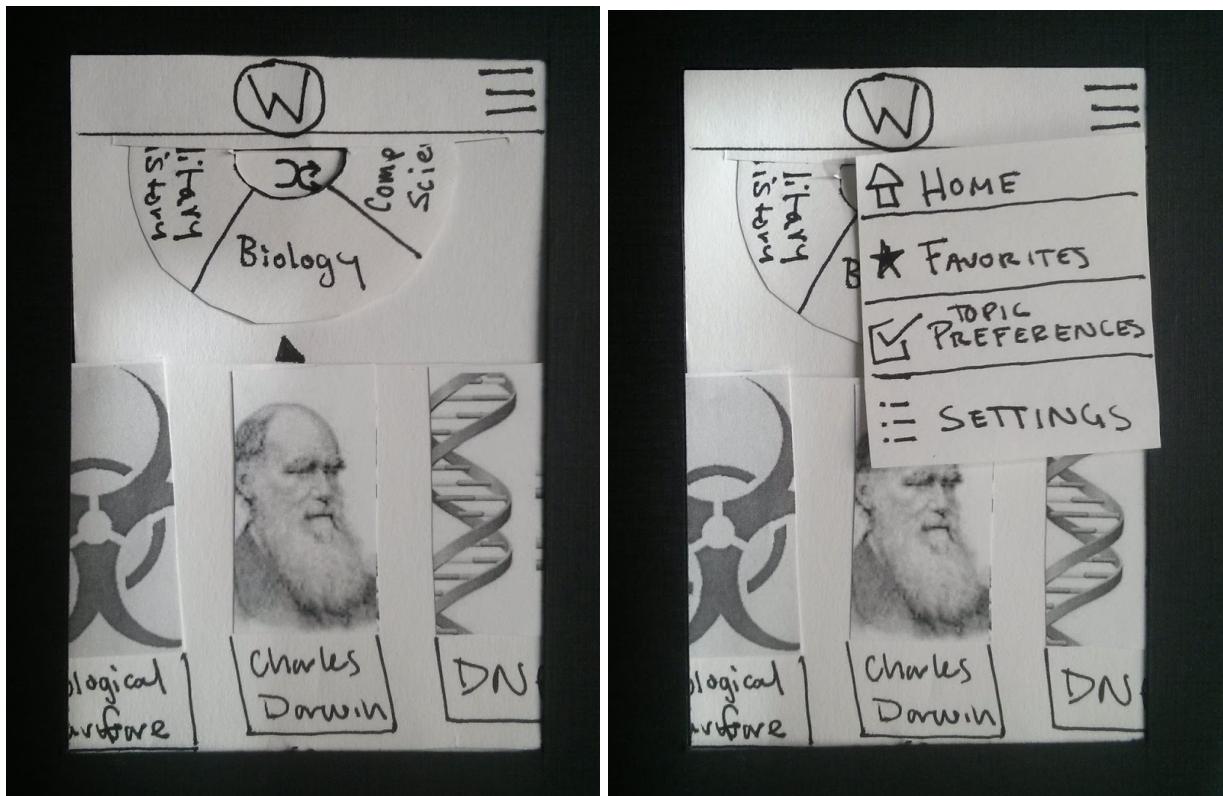
We've all been there: waiting in line, on the bus, in the bathroom. You're effectively stuck, and you have only your phone as a source of entertaining yourself. You feel like being productive, like learning something new, and not looking through your Facebook feed, email, and social media outlets for the millionth time. Wonderlust is a mobile application that gathers knowledge that interests you in bite-sized chunks to satisfy your craving for fresh information and intellectual curiosity at the same time. We have identified browsing, retrieving, and discovering as the three critical tasks, and designed an interface for the application. The purpose of creating a Low-Fi prototype is to gather potential user feedback to assess whether our design facilitates users to complete the tasks, and how it should be changed to make the experience smoother and better fit for customer needs.

[\[Mission Statement\]](#)

*To harness, enable, and reward our impulse to learn about the world during snatches of otherwise wasted time.*

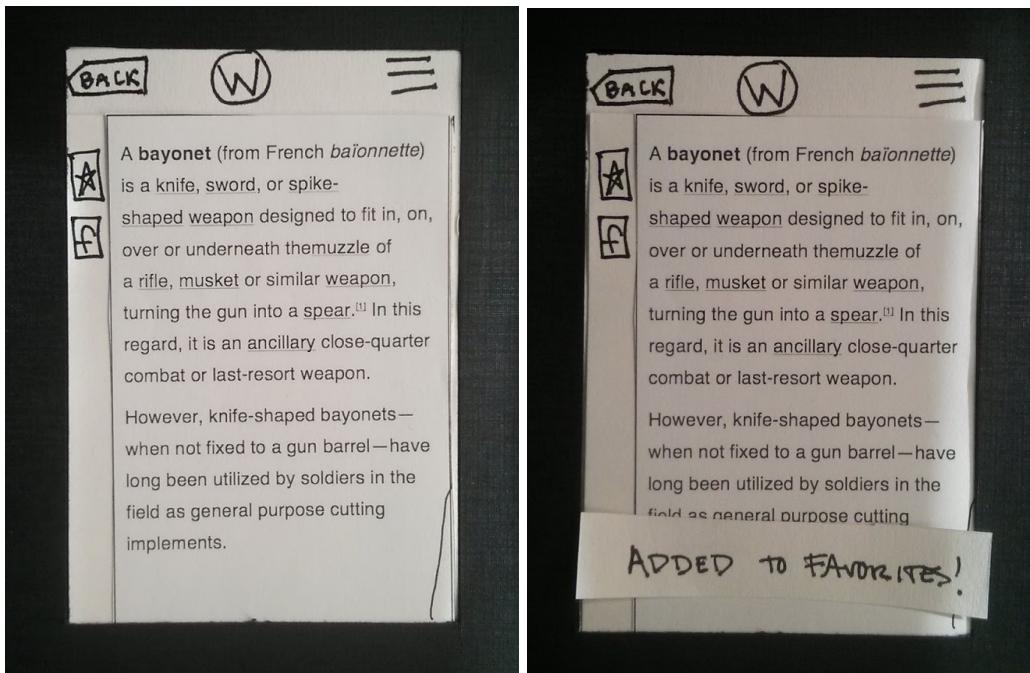
## PROTOTYPE DESCRIPTION

To simulate our user interface, we created a paper prototype approximately the same size as a smartphone screen to simulate the visuals of a smartphone. Our key feature was the wheel on the home screen that acts as a Topic selector. The customer can view the Topics on the wheel, and spinning the wheel will change the Topic. There is also a ‘shuffle’ button at the center that generates random Stories. Once a Topic is selected, the images at the bottom update to represent Stories that relate to the Topic, which the customer can slide left and right to see more. The three lines at the top right is a button customers can press to open a dropdown menu of some key screens. Figures 1 shows the functions in a LoFi prototype. Notice that participants can ‘spin’ the paper wheel, and slide the pictures left and right.

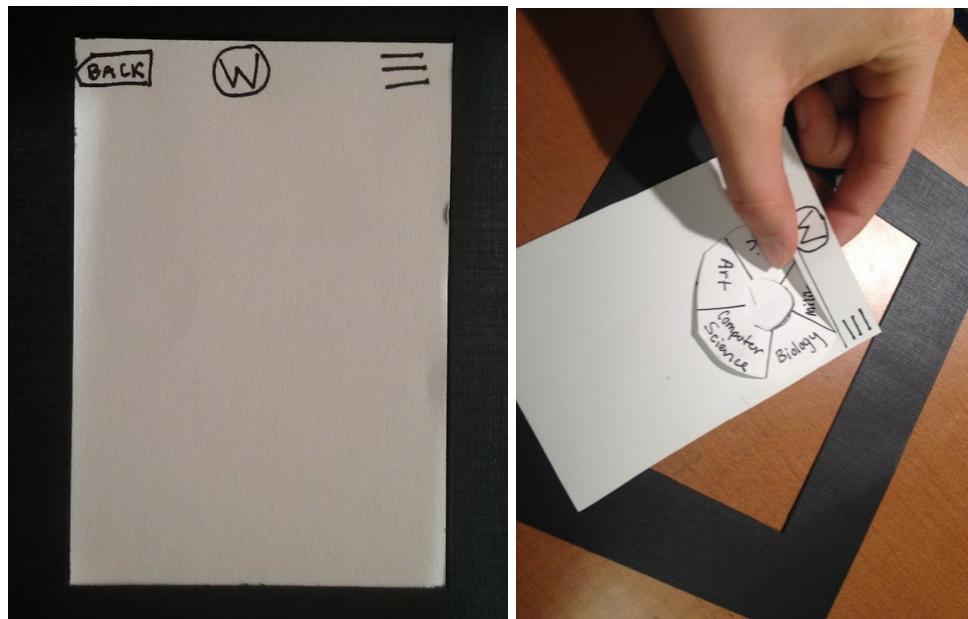


**Figure 1:** Home screen. The Topic wheel is currently set to Biology and Biology Stories are displayed. Notice the ‘shuffle’ button in the center of the wheel. In the image on the right, the top right button is pressed, and a drop down menu is shown.

The Story page is focused on content, and is thus mainly text. The bar on the left holds Save, and Share functions, and a Back button is also introduced. As Figure 2 shows, pressing the Save button brings up a dialogue that indicates it has been saved. Given the number of possible Stories, content for different Stories were printed on different sheets of paper, and these were placed on the background in our prototype (Figure 3).

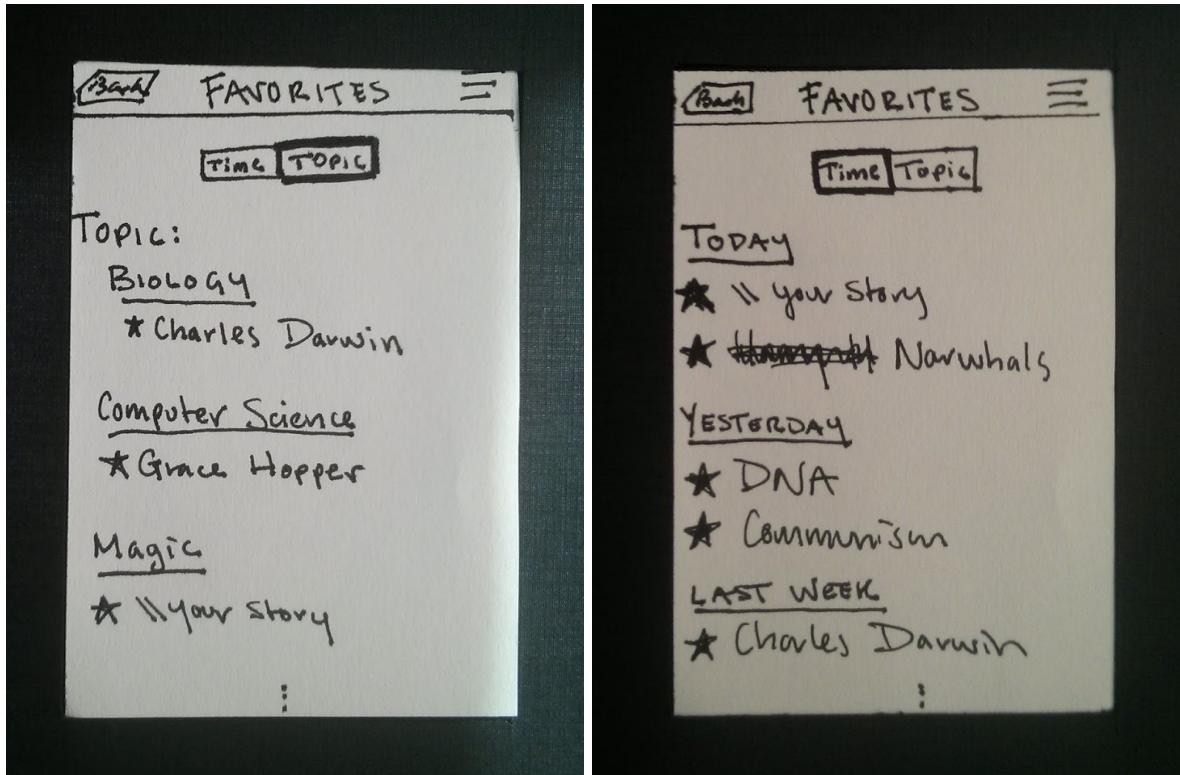


**Figure 2:** Story screen. The right image shows the dialogue displayed when the Story is saved



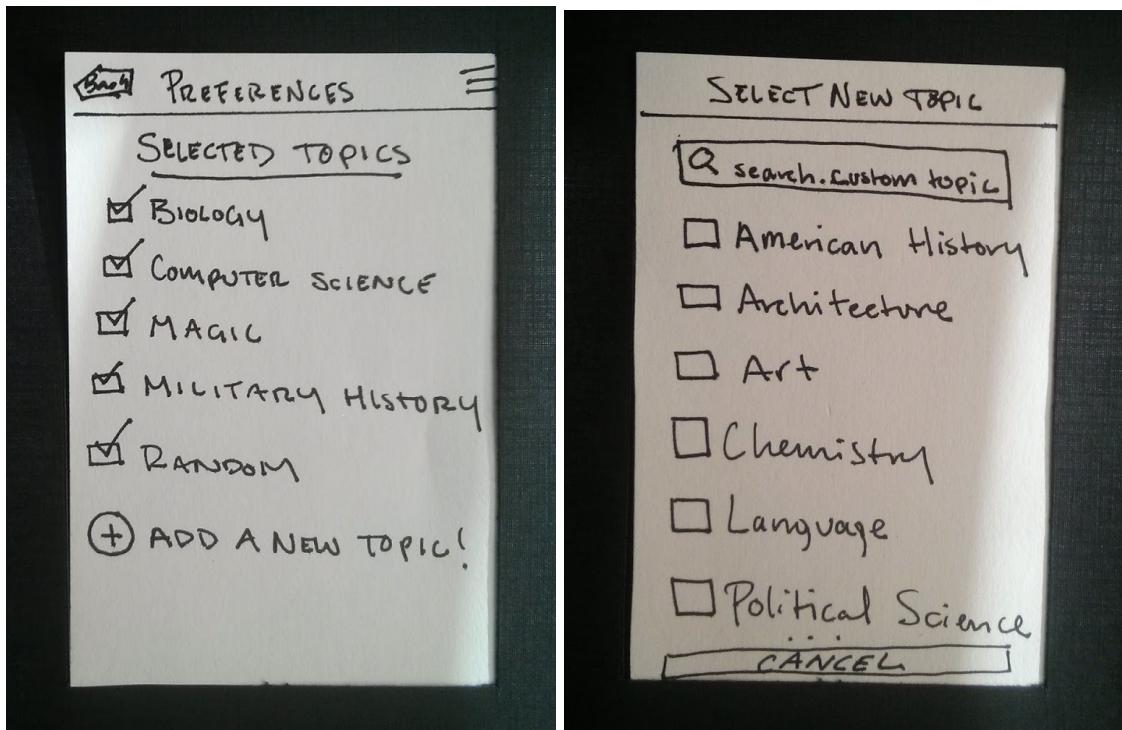
**Figure 3:** Paper prototype constructed from multiple separate pieces

The Favorites screen contains links to saved Stories where the customer has the option to view them sorted by time saved or Topic area (see Figure 4). The entries in the prototype were hard-coded, but one could imagine more entries and such that scrolling becomes necessary.

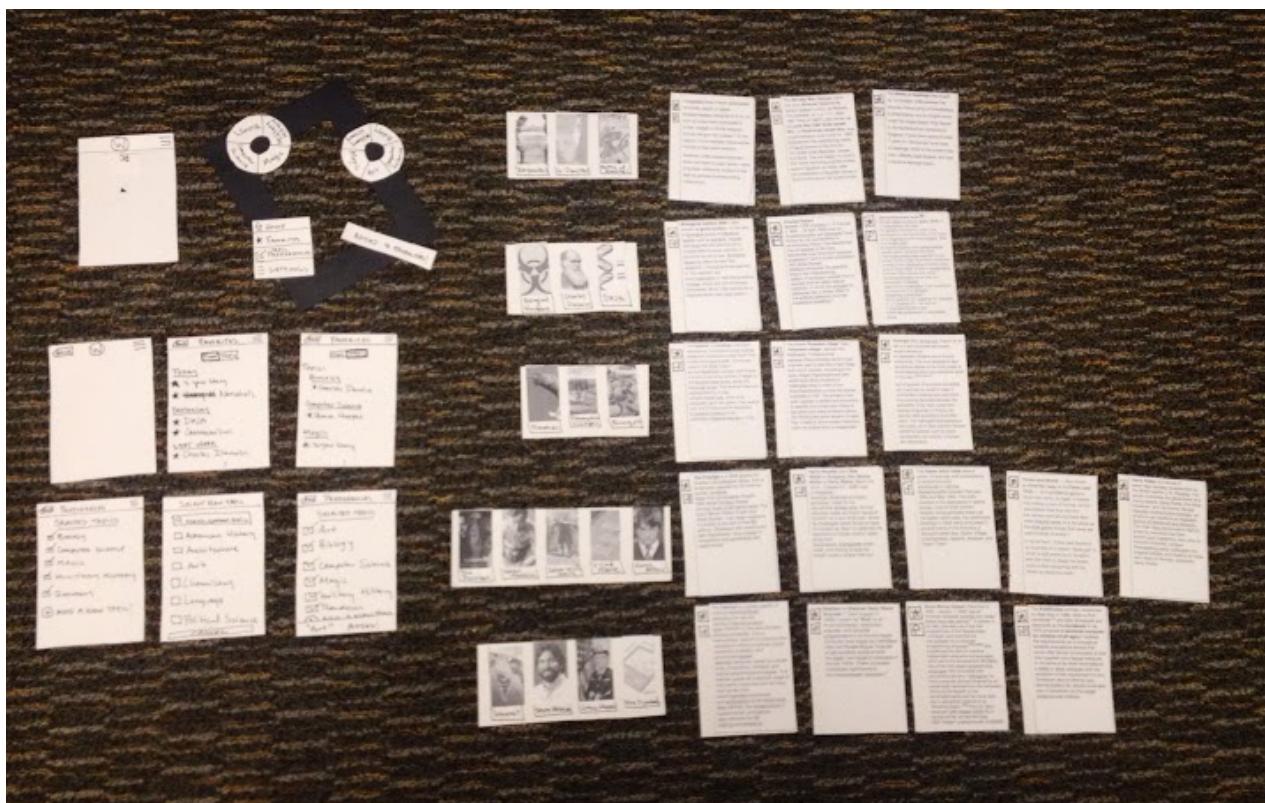
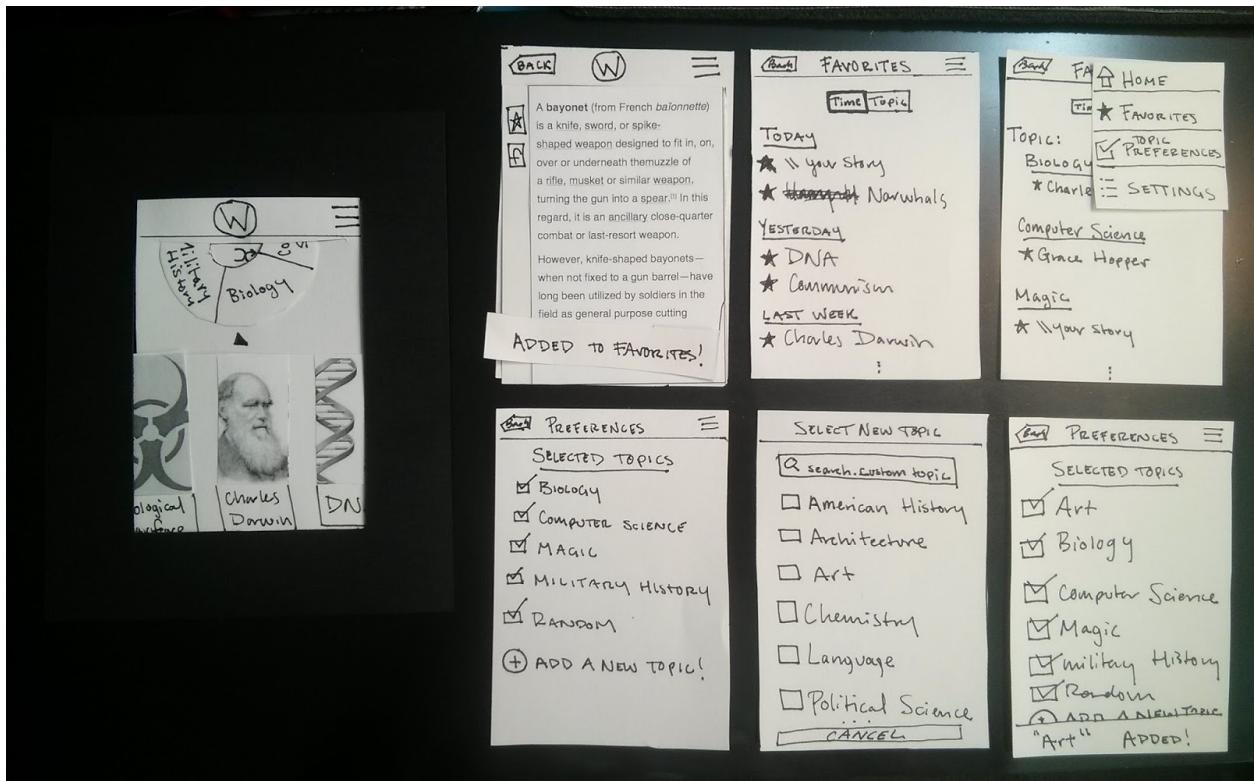


**Figure 4:** Favorites screen. Sorted by Topic on the left, and by time saved on the right.

Finally we have the Topic Preferences screen where customers can select which Topics to display on the wheel (Figure 5a). This is accessed via the top right dropdown menu. The screen displays all the currently selected Topics, and a button to add a new Topic. Pressing this button opens a screen where users can choose a Topic from a pre-defined list, or search for one (Figure 5b). All the functionalities here are accessed by button presses.



**Figure 5:** Topic preferences screen (left), and the screen to choose a new Topic (right)



**Figure 6:** Entire paper-based system as functioning screens (top), and as independent components (bottom)

## METHOD

### *[Participants]*

Participant 1, age 52, was selected based on his professional experience in Design Automation, a field at the intersection of Computer Science and Electrical Engineering. He explained that a key in this field is enabling customers to visualize the vast amount of information presented to them, which corresponds to our own design goal. He was interviewed in a multimedia room and interacted with the prototype at a large table. Participant 1 did not receive compensation.



**Figure 7:** Participant 1 being interviewed

Participant 2, age 16, was selected to represent the perspective of a high schooler as well as the perspective of one self described as relatively unfamiliar with technology. His feedback will help us to engage younger customers and to improve the intuitiveness of the interface for those without extensive experience with phone apps. Participant 2 did not receive compensation.



**Figure 8:** Participant 2 interacting with the prototype

Participant 3, age 23, is a masters student studying Atmosphere and Energy Engineering. Selected because he was an ideal user - young, technically savvy, intellectually curious, smartphone user who could clearly verbalize his thoughts on the interface. Participant 3 received compensation in the form of cookies. He was interviewed in a computer cluster.

Participant 4, age 21, is an undergraduate who is also studying Atmosphere and Energy Engineering. was also selected based on the fact that he was an ideal user and, much like participant 3, was fairly technically savvy, but with somewhat limited smartphone usage. He was also interviewed in a computer cluster. Participant 4 did not receive compensation.

#### *[Tasks]*

Participants were asked to briefly explore Wonderlust's home page to become comfortable with the interface and then to complete three tasks. The first was to find and save a Story on the 'Harry Houdini' (a magician). This corresponds to the simple "Browsing to Kill Time" task from the previous assignment. Participants were then asked to retrieve a saved Story, specifically a Story on DNA; this is the moderate "Retrieving Saved Story" task. Finally, participants were asked to find a Story on Art, which required adding a new topic; this is the complex "Read Stories from a specified Topic" task.

#### *[Procedure]*

We approached potential test candidates and asked whether they would be interested in participating in a user interface test for an app we were developing. If the candidate agreed, they signed a consent form ensuring their anonymity (Appendix A) before the testing began. At the beginning of each testing session, participants were briefly introduced to Wonderlust and to the study design - that we would watch how well they were able to complete a series of predetermined tasks to help us understand how to improve our design. Tasks were described out loud, and participant comments and actions were recorded as they occurred. Participants were encouraged to voice their opinions during the session as well as to offer thoughts when all tasks were completed. Two researchers were present at each session: a ‘computer,’ who changed the screens of the prototype, and an ‘observer,’ who posed the study tasks and noted the participant’s reactions.

#### *[Test Measures]*

Our primary interests were in whether participants understood which icons on the screens were buttons, how to utilize them, and how quickly they were able to complete each of our tasks. We observed their ‘button’ presses in addition to what they thought would happen, and their reactions to the events on the screen. We observed whether the outcome matched expectations, and the positivity/negativity of the reaction to the outcome. The number of button presses or attempts required to reach the correct screen based on the task was also recorded. In general, we gauged the participants’ levels of comfort with the interface, and whether it was easy and fast to complete the actions they want. Participants were also prompted to indicate any features they would like in addition to those present.

## RESULTS

The results can be grouped into two categories: design elements which should be reconsidered to better increase the app's functionality and improve user understanding, and those elements to which users responded positively and found enhanced the app's usability.

The main issues that our participants found with Wonderlust's interface included locating the topic preferences page, the inability to search for content, the inactionable "W" logo, and the topic scroll wheel. The topic preferences page appeared to cause the most trouble for participants, particularly when they were asked to add new topics to their feed. Participants had difficulty locating this screen, largely - they reported - due to their misunderstanding of the name "Topic preferences". Most participants correctly identified the main menu button where the topic preferences button is located, but got lost/confused from there. Several users reported that a name change may help to solve this problem. When attempting to find/add topics, many users first instinct was to search for content using a search bar. Additionally, this task led to the question of impermanent topics, and whether a user could search for a new topic once without adding it to his or her feed. Another issue that users encountered was the "W" logo; almost all the participants tried to use it as a home or back button. Finally, two users felt that they might be hesitant to use a wheel with too many topics, and that we should consider alternative ways of enabling users to browse topics.

In general, participants found the app to be 'intuitive' (all users explicitly used this word), as well as the 'uncluttered' design. Users enjoyed how the app did not provide them with an overwhelming amount of functionality or number of menu options. All participants reported enjoying using the scroll wheel, saying that it was a "fun", "different", and "cool" way to pick topics. Finally, many participants (particularly the younger subjects) responded very positively to the 'random' feed button, saying they liked having an easy way to access fresh content, with an unambiguous and easy to see button to help them accomplish that task.

## DISCUSSION

The largest area for improvement our study revealed concerns our third task, discovering stories about a specific topic. When asked to read about art, a topic that was not already on their wheel, Participant 1 and 4's first instinct was to look for a search bar instead of using topic preferences to add the topic to their wheel, and they ran into a roadblock because we didn't have a search feature. Our next iteration of the interface will accommodate this user schema by featuring a search button on every screen. We will also reconsider our menu to make the "Topic Preferences" button more prominent. Participant 1 explained that he simply hadn't read the menu carefully enough, which could be due to the handwriting on the written prototype, but Participant 4 suggested that the name of the button could make it more clear that it would add a topic to the wheel. Finally, several participants tried to click a topic on the topic preferences page to access the story stream for that topic. We will address this redirecting a click on a topic on the topic preferences page to the main screen with the correspond topic selected on the wheel.

While the participants, especially Participant 4, liked the idea of shuffle, they were not sure how to exit the shuffle stream. The source of this ambiguity stems from the fact that when shuffle was selected, the wheel still looked like a specific topic was selected. The next iteration of our interface will keep the central shuffle button but also add a "Shuffle" slice on the wheel so it is more clear that wheel can be used to navigate out.

Our participants anticipated that the W logo on the top bar would have a function, so the next iteration will use it as a shortcut to the home page. This will eliminate the need to press the back button multiple times to return to the wheel screen after following links to access multiple stories. Our participants noted that they found the wheel novel and engaging. As we move further into the design process for the wheel, we will remain aware of Participant 3's concern that it will become cumbersome when populated with too many topics. Fitt's Law will help us to optimize interaction.

Three of our four participants interpreted our app as an interface for Wikipedia. This observation points to a good source of stories, though formatting might be difficult given that content is crowdsourced, as well as a new area for exploration. We will evaluate current apps that provide an interface for Wikipedia to learn what features users value in these kind of apps as well as to get a sense of where current solutions fall short.

Because this study relied on a manually updated paper prototype, there are some design features that will be better evaluated with a digital prototype. We were unable, for example, to simulate directly updating the story stream as the wheel turned. We could not determine if the customer would think to scroll across the story stream without the visual cue of the long story stream bar sticking out behind the phone border. Handwriting, especially for the shuffle button and "Topic Preferences" button, added a layer of ambiguity unassociated with out interface. Further, a digital prototype that can be held will allow us to determine if the interface remains intuitive in more chaotic, real world situations. In sum, our next prototype iteration will aim to retain the uncluttered design and intuitive interface flow our participants commended while optimizing the parts that sparked confusion.

## APPENDIX A: CONSENT FORM

### Consent Form

The Wonderlust application is being produced as part of the coursework for Computer Science course CS 147 at Stanford University. Participants in experimental evaluation of the application provide data that is used to evaluate and modify the interface of Wonderlust. Data will be collected by interview, observation and questionnaire.

Participation in this experiment is voluntary. Participants may withdraw themselves and their data at any time without fear of consequences. Concerns about the experiment may be discussed with the researchers Gabe Poon, Kat Gregory, Leigh Hagestad, and Odette Du, or with Professor James Landay, the instructor of CS 147:

James A. Landay  
CS Department  
Stanford University  
650-498-8215  
landay at cs.stanford.edu

Participant anonymity will be provided by the separate storage of names from data. Data will only be identified by participant number. No identifying information about the participants will be available to anyone except the student researchers and their supervisors/teaching staff.

I hereby acknowledge that I have been given an opportunity to ask questions about the nature of the experiment and my participation in it. I give my consent to have data collected on my behavior and opinions in relation to the Wonderlust experiment. I also give permission for images/video of me using the application to be used in presentations or publications as long as I am not personally identifiable in the images/video. I understand I may withdraw my permission at any time.

Name \_\_\_\_\_

Participant Number \_\_\_\_\_

Date \_\_\_\_\_

Signature\_\_\_\_\_

Witness name \_\_\_\_\_

Witness signature\_\_\_\_\_

## APPENDIX B: TASKS SCRIPT FOR PARTICIPANTS

Thank you for participating in our User Interface testing! Please complete the following tasks on our prototype in the order they are presented. Once you completed a task, you can move on to the next one.

You may find some tasks more difficult than others. Please try to the best of your abilities to complete them without asking our researchers how the interface works. Feel free to voice your thoughts during the process: all feedback is appreciated.

Tasks:

1. Briefly familiarize yourself with the first screen you see, and find a story you find interesting.  
Once you have done that, find a story on Harry Houdini (magician) and save it.
2. Suppose you saved a story on DNA yesterday. Please return to the story again.
3. You were at a dinner party last night and wished you were better able to contribute to the conversation about Art. Please find a stream of stories that relate to Art.

## APPENDIX C: LOG OF CRITICAL INCIDENTS

[Participant 1]

### Task 1

- “This piques my interest” (Rating: 0)
- Explored wheel (Rating: 0)
- Hit shuffle (Rating: 0)
- Thought hitting shuffle again would get back (Rating: 2)
- Then spun the wheel (Rating: 0)
- Would tap on the wheel given that he wanted to select (Rating: 0)
- Tapped on one of the first articles (Rating: 0)
- “Star and an f... facebook” (Rating: 1)
- “Tapped star – means I like it” (Rating: 0)
- Tapped settings (Rating: 0)
- Tried to make it go away successfully (Rating: 0)
- Thought hitting W would go to home page (Rating: 2)
- Got the back button (Rating: 0)
- Would expect to get a list of biology (Rating: 2)
- “Very intuitive to me” (Rating: 0)

### Task 2

- Hit the star button (Rating: 0)
- Easily got to favorites (Rating: 0)
- “Look like they’re ordered by topic... oh and I can do it by time!” (Rating: 0)

### Task 3

- See if art was in the scroll bar (Rating: 0)
- Then looked for a search feature on menu (Rating: 0)
- “If it was a real device, I’d hit shuffle because I don’t know how to add” (Rating: 3)
- “I’m stumped” (Rating: 4)
- Double clicked on topics (Rating: 2)
- “I didn’t see topic preferences” (Rating: 1)

### General comments

- “I would put search right on the front – I’m a big search fan” (Rating: 3)

*[Participant 2]*

Task 1

- Browse home page
- Switched Topic: "Wheel was cool. I like it. " (Rating: 0)
- "I like that there is both random and specific topics." (Rating: 0)
- Liked shuffle (Rating: 0)
- Successfully completed task (Rating: 0)

Task 2

- Took two tries to get to settings - shuffle, then settings (Rating: 2)

Task 3

- First tried random feed just to see if art articles had happened to show up there. Tried refreshing shuffle again. Looked at wheel. THEN preferences (Rating: 3)

General comments

- "I feel like an iphone, tech savvy genius!" (Rating: 0)
- If I want to know stuff, that's fine, But if I want entertainment, you don't always know what you want to be entertained by." (Rating: 2)

*[Participant 3]*

Task 1

- Understood shuffle (Rating: 0)
  - Pressing it again would get new feed of random (Rating: 2)
  - Or would slide first unless got into habit of mashing random button (Rating: 1)
- Opens Story page: "What's that little star thing" (Rating: 1)
  - Ok that makes sense - standard symbol
- "F I assume is facebook" (Rating: 0)
- "Looks like it's a wikipedia interface" (Rating: 0)
- "I assume at some point I can scroll down" (Rating: 1)
- "I assume I can click on these highlighted things and be directed to a new page" (Rating: 1)
- I think the wheel might be cumbersome once you add too many objects (Rating: 1/2)
  - More traditional picker could be good
- Got the swiping thing (Rating: 0)
- Cool! (Rating: 0)

- If I press Biology, it will expand out to topics related to biology (Rating: 0)

## Task 2

- Did not initially find the target Story: "That was just me not knowing the 3 card monte, nothing to do with the app" (Rating: 1)
  - Thought that they referred to the three first cards
- I would have thought about [Favorite Stories] in terms of topic (Rating: 1)

## Task 3

- Clicks menu button: "Topic Preferences sounds interesting" (Rating: 0)
- Got topic preferences (Rating: 0)

## General comments

- Weren't many things to click, so very obvious (Rating: 0)

*[Participant 4]*

## Task 1

- Played with wheel: "Cool little rotating thing" (Rating: 0)
- "Slow loading time" (Rating: 1)
- Opens Story page: "Looks like a wikipedia page" (Rating: 0)
- Noticed buttons on the left of Story page: "I can share it or save it" (Rating: 0)
- I like that there's nothing itself - very much focused on biological warfare, no clutter (Rating: 0)
- "I'm wondering if I scroll this (wheel) will it refresh every time I got to the next thing, or load only when I stop"
  - Once you let go, it should do it (Rating: 2)
- Task successfully completed (Rating: 0)

## Task 2

- Pressed menu button: "That was a good menu" (Rating: 0)
- Looked at options on menu: "I don't know the difference between favorites and topic preferences. I guess it's just my history?" (Rating: 3)
- Opened up Favorites page
- "Maybe a search icon would be good?" (Rating: 3)
- Task successfully completed (Rating: 0)

## Task 3

- Checked wheel for art (Rating: 0)
- Immediately went to menu (Rating: 0)
  - “No search option, which is what I was hoping for” (Rating: 3)
- Looked at Topic Preferences, did not see art (Rating: 0)
- “at this point I’m lost as to how to find art... I could have added another topic on topics preferences” (Rating: 3)
  - But I don’t like to do this because it isn’t necessarily one of my preferences (Rating: 3/4)
- Having discovered the add button on the Topic Preferences page: “Now, I hit art” (Rating: 1)
- Task completed with difficulty (Rating: 3)

Comments:

- “Maybe if you hit W that goes to search” (Rating: 2)
- “Categories is a better word than topic preferences” (Rating: 2/3)