SENG 310 – Human Computer Interaction

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Participant Summary:

For this study we interviewed 6 different people with unique characteristics. We chose participants based on the following criteria:

- **Diverse hiking experience:** We interviewed both experienced hikers and novices to gain insight into their preferences for hiking apps, ensuring a diverse perspective on user needs across experience levels.
- **Wide demographic range:** We interviewed people with various age ranges, genders, and cultural backgrounds. This was done to ensure our app is accessible and appealing to a broad audience.
- **Different levels of technology experience:** Participants ranged from tech-savvy to less experienced to ensure our app is intuitive and user-friendly for all users.
- **Different levels of interest in nature and education:** Participants with varying levels of interest in nature and educational content were interviewed to ensure our app's features are balanced for different preferences.

By varying participant categories, we gathered diverse information to determine key features and design elements for an effective, user-friendly app.

Research Methods:

INTERVIEWS SUMMARY:

Demographic	Frequency	Technology Usage	Motivation	Interest in Nature	Navigation	Documentation
Adult male over 40	Hikes daily to walk dogs	Brings his phone for photos and notifications	Enjoys fresh air and exercise; technology doesn't enhance his enjoyment	7/10; enjoys viewing plants	Prefers familiar trail; does not find additional navigation aids necessary	Occasionally takes photos, no other extensive documentation
Adult (early 20's) Female	Hikes in her free time	Brings her phone for	Enjoys fresh air and outdoor	9/10; highly values learning	Sometimes requires navigational	Enjoys posting photos on instagram to

		music and photos	activities; technology doesn't enhance her enjoyment	about flora and fauna	help on new trails; online maps are often insufficient	document her experiences
Adult (early 20's) Male international student	Hikes bi-weekly, mainly in the summer	Uses his phone for navigation and identify wildlife	Interested in gamified elements and educational content	8/10; enjoys learning about local flora and fauna	Struggles with navigation; prefers well-labeled trails and detailed maps	takes many photos and videos to share his experience with family
Adult (early 20's) Male	walks daily once or twice in urban settings	uses phone to listen to music and track steps, happy with current technology with interest in gamified elements	8/10; enjoys peacefully watching wildlife	Open to learning more about local plants and animals.	Confident with navigating familary areas and enjoys spontaneous wandering; struggles with navigation in unfamiliar locations without phones.	rarely takes photos or videos except for vary notable events, for self or social media
Adult female over 40	Never but enjoys an occasional walk	Uses her phone everyday while walking but it doesn't distract her from the satisfaction of activity	Not interested in gamified elements or recording statistics	7/10; nature does not significantly influence walking, but is interested in learning more about flora and fauna	Would likely get lost without navigational aids	Likes to take lots of photos and videos during walks and often shares them on social media.
Adult (early 20's) Female	Hikes about once	She rarely uses technology for	She is not interested in gamified	4/10; She sees little connection	She has experience getting lost	She enjoys taking photos and videos for instagram to

	every 3 months	navigation relying on trail instructions instead, but uses her phone to take photos and videos. Although, she views hikes as a mental detox from screens so only captures specific moments	elements or rewards because she views hikes as mental break rather than a competitive activity	between hiking and flora/fauna and mainly focuses on the fitness aspect of hiking rather than nature	and feels secure knowing she has her phone for emergencies.	document hikes and believes that it enhances the hiking experience particularly for one time hikes

ETHNOGRAPHY SUMMARY:

	Observation	***Method***	***Time Taken (min)***
Adult male over 40, lots of hiking experience (Identifying a Camellia tree)	Noted large pink flowers, searched online for tree identification	Used google and related images to confirm the tree's name	4
Adult (early 20's) Female, lots of hiking experience (Identifying a Camellia tree)	Searched online for pink flowering trees in Victoria	Used google and related images to identify the tree	3
Adult (early 20's) Male international student, little hiking experience (Identifying Lorquins Admiral Butterfly)	Fascinated by plants and insects, scanned a butterfly using Google Lens	Used Google Lens and live-streamed the identification process to his parents	10
Adult (early 20's) Male, little hiking experience (Went on a walk)	Prefers a limited use of technology and focuses on listening to music	**Reflexion:** Values the peace and mental relaxation provided	**N/A**

	and occasionally taking photos. Keep track of steps using a fitness app, and find it interesting.	by walking. Interested in gamified elements and educational content about local wildlife.	

What Went Well

Interviews:

- Provided detailed insights into the participates hiking habits, technology usage and preferences
- Revealed varying levels of interest in nature and technology. This helped identify target users needs
- Highlighted the importance of intuitive navigation tools and educational content

Ethnography:

- Allowed for real-time observation of people's interaction with nature
- Showed us how Participants' use technology to identify plants and animals emphasized the need for efficient identification features.
- Demonstrated different levels of engagements and interest in documenting hikes

What Went Poorly

Interviews:

- Some responses were very short and it was difficult to come up with follow-up questions on the spot that wouldn't also get short responses
- Limited time resulted in a limited number of participants. Having more participants with more interviews could have been beneficial.

Ethnography:

- We aimed to respect participants' time, resulting in limited depth of observation.
- Some participants were very familiar with the environment which may have influence their behavior, leading to less exploring

What We would do differently next time

- Use more open-ended questions to encourage more detailed responses

- Try to ask more follow up questions to gain a deeper understanding of participants behaviors
- Increase the number of participants to gather more data
- Have a longer observation period to capture more detailed behaviors and interactions
- Conduct some observations in different environments like unfamiliar trails to see how participants adapt and use technology

Task Descriptions:

From this study, we have highlighted general tasks and 3 key tasks for our AR glasses app to be used during hiking:

General Tasks:

For our application to function, we need the following basic features:

- Find the most efficient route on a hiking trail
- Save hike data to user accounts in a secure and private manner.

Requirements:

- The interface must provide navigation on the most efficient route.
- The interface must provide alerts to maintain optimal route in real time.
- The interface must only display user data to a specific user.

Flora and Fauna Engagement Task:

From our study, key tasks for our AR glasses app during hiking include identifying local flora and fauna, which many participants find enhances their hiking experience. Diversity in plant life along recommended trails is crucial to maintaining interest. The AR app will

provide flora and fauna identification via AR glasses and the app suggests trails with increased diversity to promote hiking.

Requirements:

- The interface must be capable of returning relevant data from scanning extensive plants from different views during or after a hike.
- The interface must find and recommend new trails with diverse flora and fauna in the user area.

Cell Phone Distraction Reduction Task:

Many participants noted that phone distractions deteriorate their hiking experience. Our AR glasses app integrates flora/fauna info, navigation, and photography to minimize distractions and enhance immersion.

Requirements:

- The interface must incorporate flora and fauna information, navigation, and photography into the AR application.
- The interface must have a customizable display for AR glasses.

Navigation Enhancement Task:

Participants highlighted navigation challenges on poorly labeled trails. Our AR glasses app should provide easy navigation. It's beneficial to track users' previous hikes with snapshots for revisiting. Maximizing our app's navigation capabilities for hiking will enhance its utility.

Requirements:

- The interface must infer a route on a poorly labeled trail with reduced data.

Persona:

Adult with high-level hiking experience

Sarah Mitchell

Quote: "Hiking is my escape from the daily grind. I want to immerse myself in nature, challenge myself physically, and leave the tech distractions behind."

Type of User: Primary

Description: Sarah Mitchell, a 38-year-old Canadian environmental scientist from Vancouver, values challenging hikes with diverse terrains. With over 20 years of experience, she rates her interest in hiking at 9/10. Sarah relies on her extensive knowledge rather than technology, preferring to stay unplugged during hikes to fully connect with nature. She carries her phone for emergencies but seeks a hiking experience that allows her to record flora and fauna encounters while minimizing technological distractions, enabling her to immerse herself deeply in nature.

Goals:

- Desires a hiking experience that is as close to nature as possible without technological interference.
- Interested in learning more about flora and fauna non-intrusively.
- Looks to keep record of her discoveries without technological distractions.

Young adult with minimal experience

Garry Gill

Quote: "I love discovering new plants and animals on my hikes, but constantly using my phone takes away from the experience. If only there was a way to combine navigation, learning, and photo-taking into one seamless tool."

Type of User: Primary

Description: Garry, 22, studies engineering at the University of Victoria and hikes bi-weekly on easy-to-moderate trails in the summer. He rates his interest in hiking at 8/10 and uses his phone for navigation and plant identification, finding it distracting. Motivated by gamified elements like badges, Garry seeks an immersive, distraction-free hiking experience. He struggles with poorly labeled trails and prefers an AR glasses solution that integrates navigation, flora and fauna engagement, and photography to enhance hikes without constant phone use.

Goals:

- Seeks an easy-to-use navigation tool integrated to reduce the reliance on his phone.
- Wishes for an interactive way to learn about the flora and fauna along his hiking routes.

Journey Maps:

Garry Gill

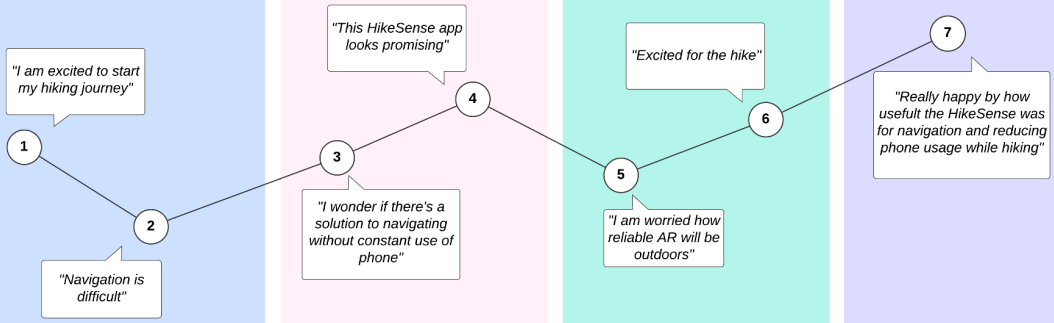
Scenario

Garry is a novice hiker who goes on hikes biweekly. He struggles with navigation while hiking and needs to constantly rely on phone for navigation. He is looking for a navigation solution that minimizes his phone usage so that he can have more immersive hiking experience.

Expectations

- Tool to navigate through hikes, without constant phone usage.
- Make hiking expereince more immersive and engaging

Challenge	Discovery	Planning	Experience
1. A new hiker interested in hiking. 2. Struggles with navigation and often gets lost on trails. 3. Finds it counterporductive to frequently look at the phone for directions 4. Desires a more immersive hiking experience without constant reliance on technology.	5. Encounters the AR glasses solution while researching navigation alternatives. 6. Explores the features and capabilities of AR technology for hiking. 7. Discovers the prospect of a more immersive and technology-reduced hiking experience through HikeSense' innovation.	8. Researches the features and functionalities of the HikeSense app. 9. A little skeptical about the reliability of AR technology in outdoor environments. 10. Prepares for the first hike using the HikeSense app by familiarizing with the app's interface.	11. Experiences seamless navigation with the HikeSense app's AR glasses, finding them intuitive and easy to use. 12. Appreciates the reduced reliance on his phone, allowing for a more uninterrupted and enjoyable hiking experience.



Opportunities to Focus On

Need to develop engaging onboarding experiences for novice hikers, providing them with the necessary information and motivation to start their hiking journey confidently.	Make our app more discoverable by doing AR glasses demonstration and promotions of our app.	Provide user expereince stories and videos to reduce skepticism about the technology and promote its uses and features.	Encourage users to give feedback and share their positive expereince on the app.

A novice hiker who struggles with navigation and uses our HikeSense app to resolve that issue.[1]

Sarah Mitchell

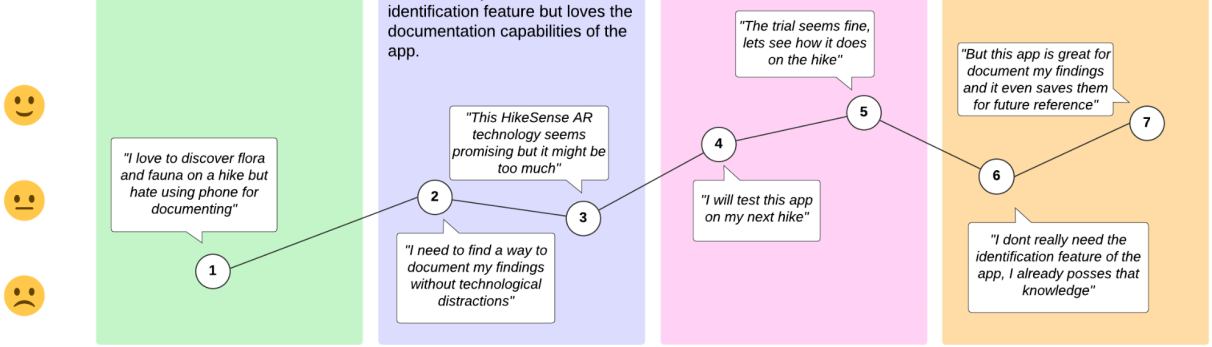
Scenario

Sarah is an experienced hiker with 20 years of hiking experience. As an environmental scientist, she likes to explore and document the flora and fauna, but she dislikes using her phone to do so as it distracts her from nature. She seeks a tool to assist in documenting the flora and fauna.

Expectations

- Make hikes more immersive without distracting from nature.
- Document the flora and fauna discoveries while hiking.
- Save the documentation for future reference.

Challenge	Discovery	Planning	Experience
1. An expereinced hiker who likes to explore the flora and fauna while hiking. 2. Loves to document her findings, but dislikes using phone to do so. 3. Seeks a tool to aid in her discoveries, by providing information and documenting the findings for future reference.	4. Discovers the AR glasses technology to record and augment her hiking experience. 5. Investigates the features and potential of AR technology for identifying and documenting flora and fauna. 6. Considers the HikeSense app as a solution to her troubles. 7. A little skeptical about the identification feature but loves the documentation capabilities of the app.	8. Prepare for the next hike with the AR glasses and the HikeSense app. 9. Conduct a trial run of the glasses' documentation feature to assure they work while hiking	11. Finds the AR glasses to be very efficient with documenting the flora and fauna while hiking. 12. Not very interested in the gamified achievements feature of the app. 13. Considers the identification feature of the app to be excessive as she already possesses the required knowledge but still considers it to be helpful.



Opportunities to Focus On

Promote the app to experienced hikers and assert how it could further enhance their hiking experience	Consider both the younger and older demographics when designing the app's interface to ensure its usefulness for all age groups.	Encourage user testing and ask for feedback of the app.	Allow users to deactivate features that they donot require.

An expert hiker who needs an immersive way to document her flora and fauna findings while hiking.[2]

Garry Gill

Scenario

Garry is a novice hiker who hikes biweekly. He is curious about nature and wants more information about the flora and fauna he sees while hiking. But as a beginner, his knowledge is limited, and he also dislikes using his phone as it disconnects him from nature.

Expectations

- A tool that helps in flora and fauna identification while hiking.
- Make hikes more informative without distracting from nature.
- Track and keep record of observations while hiking

Challenge	Discovery	Planning	Experience
1. A new hiker eager to learn more about nature. 2. Has limited knowledge about the flora and fauna encountered on hikes. 3. Feels disconnected from nature when using his phone to look up information. 4. Seeks a more immersive and educational hiking experience without heavy reliance on technology.	5. Comes across the AR glasses solution while looking for ways to learn about nature on hikes. 6. Investigates the features and potential of AR technology for identifying flora and fauna. 7. A little skeptic but realizes that HikeSense offers a more immersive and nature-focused hiking experience with minimal phone usage.	8. Researches the features and capabilities of the HikeSense app for identifying flora and fauna. 9. Tries the app in the backyard and is satisfied with the test and the app so far. 10. Prepares for the first hike using the HikeSense app by charging the AR glasses and getting familiar with the app.	11. Finds the HikeSense app's AR glasses effective and intuitive for identifying flora and fauna, enhancing his learning experience. 12. Appreciates the additional feature of saving the observations for later viewing. 13. Happy with the gamified achievement feature of the app, finding it motivating for future hikes

1 — *"I am excited to start my hiking journey"*

2 — *"Using phone to get information about flora and fauna is distracting"*

3 — *"I am curious if there is a way to get facts about nature without getting distracted by phone"*

4 — *"I am a bit skeptic but this HikeSense app looks promising"*

5 — *"The app works well in my backyard, lets see how it does on a hike"*

6 — *"Excited for the hike"*

7 — *"The identification feature of the app worked really well. I learned alot. The achievements I got along the way were also very motivating"*

Opportunities to Focus On

Challenge	Discovery	Planning	Experience
Need to develop engaging onboarding experiences for novice hikers, providing them with the necessary information and motivation to start their hiking journey confidently.	Reduce user skepticism by demonstrating the features and uses of our app and our innovative technology.	Promote testing the identification feature of the app more, encourage user testing and reviews.	Promote the gamified features of the app more to motivate novice hikers.

A novice hiker who is interested in exploring flora and fauna while hiking and needs an immersive way to fulfill his desire.[1]

Design Requirements

Must-Have Features

Phone App:

- Customizable Display: Must allow users to customize AR glasses display, enabling them to choose what they want to see. For example, experienced hikers might not need navigation.

- Pathway Tracking: Must be able to track the user's pathway through the trail and have snapshots from AR glasses plotted on the trail map.

- Detailed Information Review: Must allow users to review detailed information about identified flora and fauna in real-time as well as after the hike.

AR Glasses:

- Real-Time Identification: Must be capable of scanning and identifying plants and animals in real-time, catering to users with less knowledge or keen to learn more about local flora and fauna.

- Reliable Navigation: Must provide reliable navigation, especially for novice hikers on poorly labeled trails, using visual overlays to clearly guide users along the route.

Should-Have Features

Phone App:

- Trail Suggestions: Should recommend trails based on the user's current location, emphasizing routes with diverse flora and fauna to enhance the user's hiking experience and interest.

- Educational Content: Should offer educational content and interactive learning experiences about identified plants and animals.

- Gamified Elements: Should offer gamified elements like badges for identifying various flora and fauna to enhance user engagement.

AR Glasses:

- Alerts and Updates: Should provide real-time trail updates, including alerts for weather conditions and hazards, and detect potentially dangerous animals using the built-in camera.

Could-Have Features

Phone App:

- Community and Personal Sharing: Could include a community feature for sharing findings and interacting with other hikers.

- Editing and Sharing on Social Media: Could provide an easy-to-use platform for editing hiking experiences to offer seamless sharing on social media platforms as well as family.

- Live Streaming: Could include a feature for direct live streaming of photos and videos captured using AR glasses, eliminating the need for a phone and reducing user interaction and distractions during the hike.

References

[1] *Hiking in spring can be different from other times of year. A few simple steps can make your adventures a success. (n.d.)*. https://www.outdoors.org. https://outdoors.org/wp-content/uploads/2022/12/1.-Lead-Photo_Photo-by-Paula-Champagne_7G8A2987-e1651679095872.jpg

[2] *Smiling young woman hiking with backpack.* (n.d.). https://stock.adobe.com. https://stock.adobe.com/images/smiling-young-woman-hiking-with-backpack/187558173?prev_url=detail