

HikeCast - Hiking Weather App

Evaluation – Group 9

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1. Summary of Evaluation

To evaluate our hiking app's usability, we conducted observational studies and interviews. Our research efforts were initially aimed at gathering insights into the preferences and needs of our target demographic (**hikers**). We carried out an observational user study under controlled conditions which allowed us to query the intuitiveness of the application.

The **primary focus** of the study was to observe how easily users navigated through the application and how our design choices, including layout and colour scheme, influenced this aspect. Subsequent interviews further refined our understanding, highlighting areas for improvement and user-desired features. Our heuristic analysis further identified several strengths, such as consistent user control mechanisms and clear visibility of system status, which collectively enhanced the usability of the application.

However, it also brought to light some deficiencies, notably the lack of a user account feature and the restrictive nature of user comments. **To enhance user experience**, we propose implementing weather alerts, enabling image attachments in comments, and introducing offline weather data functionality. These improvements aim to boost safety, interactive engagement, and reliability of the application, especially in remote areas.

2. Evaluation Process

To evaluate the usability of our application we implemented a multifaceted approach that combined observational user studies and interviews with our primary stakeholders.

Prior to designing our system, our team carried out research to understand the needs and preferences of our target users – **hikers**. With this knowledge, we designed our system to align with their expectations and requirements.

For our observational user study, we carefully selected a controlled environment where users could interact with our application. This allowed us to closely observe their behaviours and interactions with the interface in real time. We monitored **how users navigated through the application** and noted their ability to comprehend the interface elements, such as the colour scheme and layout, which we had consciously designed to facilitate ease of use. Their seamless navigation through various features, including weather updates and trail information, served as validation of our design choices.

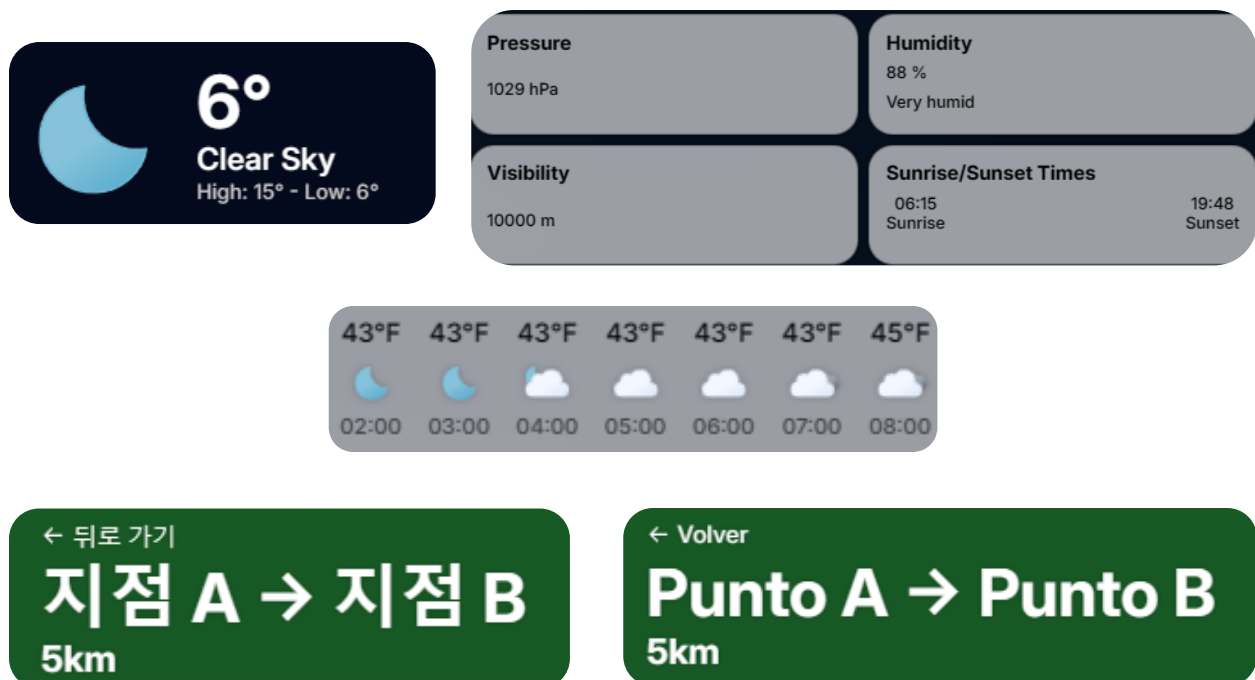
Following the observational study, we engaged the users in structured and unstructured interviews to delve deeper into their experiences and perceptions of the application. These interviews provided us with specific feedback, such as the efficiency of navigating to key sections within a designated time frame and their ideas for additional features. Being mindful of the human attention span, we ensured our interview was brief yet detailed so that we could collect accurate data.

By recording and analysing the users' responses, we were able to evaluate the extent to which our application met their needs and expectations. Their feedback served as a valuable roadmap for identifying areas of improvement and **guiding future iterations** of the application.

3. Evaluation Findings

Heuristic Evaluation Results

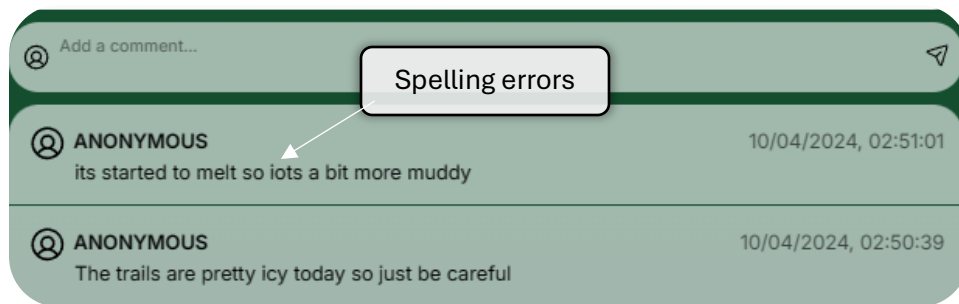
- 1. Visibility of system status:** We have decided to use a loading transition when changing between pages or trying to retrieve data from the API. Our system typically renders a page within 5 seconds. However, we do not have error messages to display to users if the system fails to render a page.
- 2. Match between system and real world:** We have included a feature within the system to allow users to change the language of the system. We have currently included English, Spanish and Korean as the language options. In addition to different languages, we have included the ability to change the units of the temperature between metric and imperial. Furthermore, we have included key words such as “clear sky”, “sunny”, “humidity” and “visibility” to communicate weather conditions in an intuitive way to hikers.



- 3. User control and freedom:** The system is designed to make navigating between pages seamless. We have included a home button and a back button on every page to make it easy for hikers to return to their previous state if they made a slip up by pressing the wrong button.

We have included a comment section in the system to allow hikers to comment on the conditions of the trails and help them make informed decisions. Since we did not have the option for users to have accounts, we have made it such that users cannot delete

comments. This does not give users as much freedom when trying to fix errors such as spelling mistakes.



4. **Consistency and standards:** The icons for the different types of weather are of a consistent style throughout the system. The font is the same throughout the system and the colours used are cohesive. In addition, each page has a responsive design.



5. **Error prevention:** One way the system helps with error prevention is with the location permission. If the user has not granted location permission, they receive a prompt from the system to allow location access. The user can also still search up the different locations manually rather than using their location. We have not included other error messages.

Could not fetch your current location.

Make sure location permissions are allowed and try refreshing the page, or search for a location manually using the search bar above.

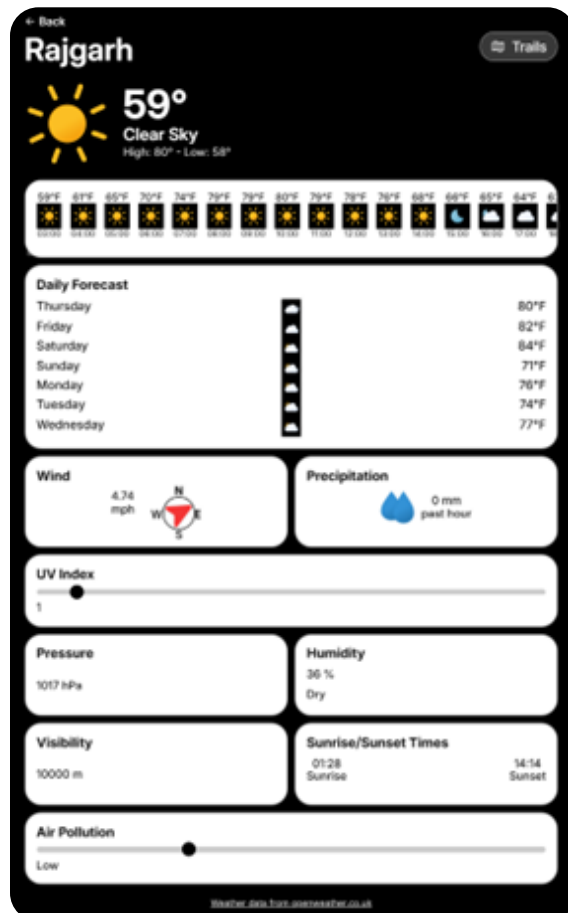
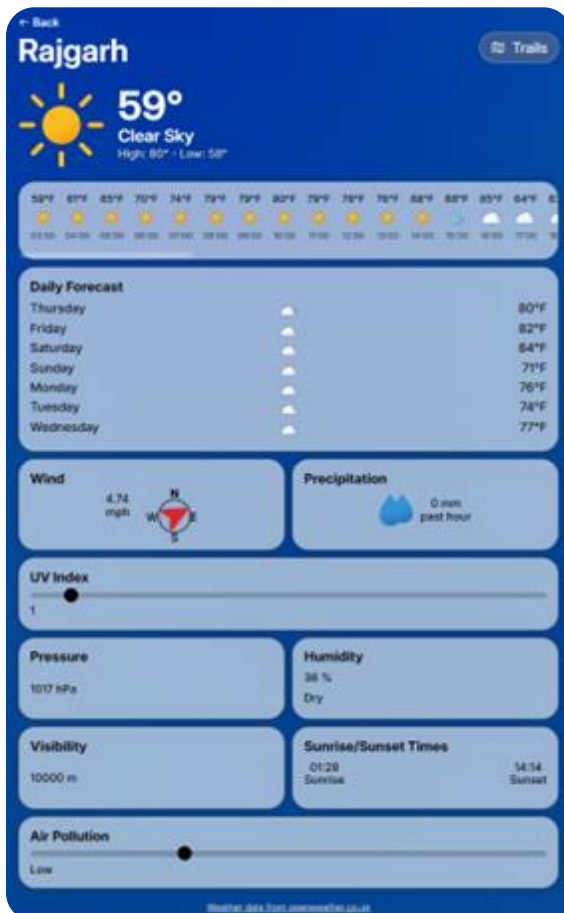


6. **Recognition rather than recall:** We have made navigating as easy as possible by using symbols such as a setting icon and a home button icon since it is intuitive to a lot of people who already use other applications.



7. **Flexibility and efficiency of use:** Some of the ways we have ensured that the system is flexible is by including a home page button and settings button on every page. We have also included a search bar which uses autofill to make it easier to find any locations. The app is efficient as it renders pages in less than 5 seconds.

8. **Aesthetic and minimalist design:** The weather conditions are presented in an aesthetic and minimalist style. We have ensured to not clutter the application, so users can clearly identify the data they need. Within the system, we have also included a high contrast mode to help users have better visibility of the application at different times of day.



9. Help users recognise and recover from errors: We have not included messages to help users recognise errors other than the location permission.

10. Help and documentation: We have decided to not include documentation as the system is simple to understand and navigate across.

Significance of Findings

The evaluation indicates that the system adheres to most of the usability principles. Features such as the intuitive navigation controls, language customisation options and efficient rendering times make this application highly effective and efficient. The application can help users plan their trips **a week in advance** due to the 7-day forecast, as well as planning hikes based on the weather at different times of day.

However, there are notable areas of improvement such as the lack of error messages and certain flexibility aspects. Improvements can include a login/register feature where users can log into their account and be able to delete their comments as well as being able to edit them if errors in spelling or grammar occur. Addressing these issues could enhance user satisfaction and usability.

Severity Ratings

The severity ratings for identified issues range from **moderate to low**. While the lack of error messages for rendering failures might lead to users being frustrated, the impact is mitigated by the overall efficiency and usability of the system. Similarly, the limitations in user control regarding comment section represents a minor inconvenience.

4. Proposed Improvements

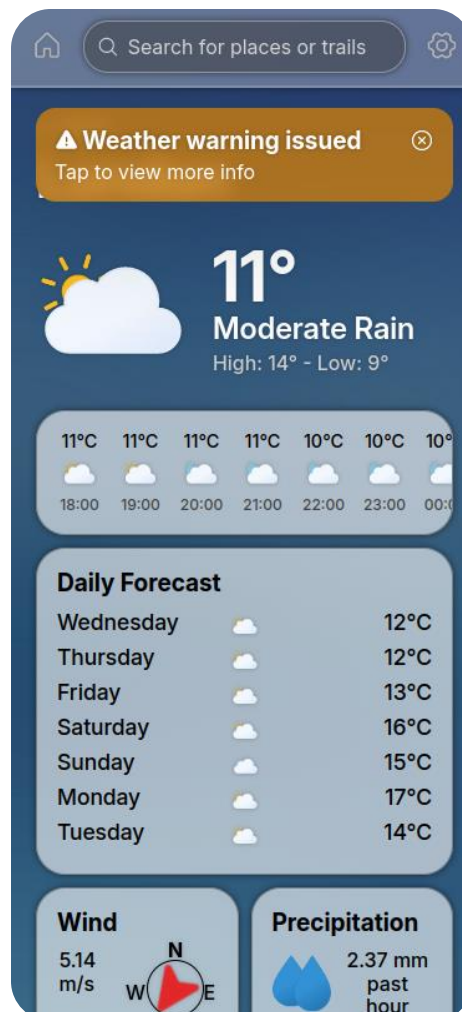
Alerts for Weather warnings

It is important to consider the **safety** of hikers, and we can do this by providing weather warnings in the app. They can choose to take action on the information provided, for example by avoiding the affected area.

Implementation

These would take the form of notifications that appear at the top of the app and will be relevant to their current location. They can then tap on this notification to view more info including details of the warning.

Example



Attaching images to comments

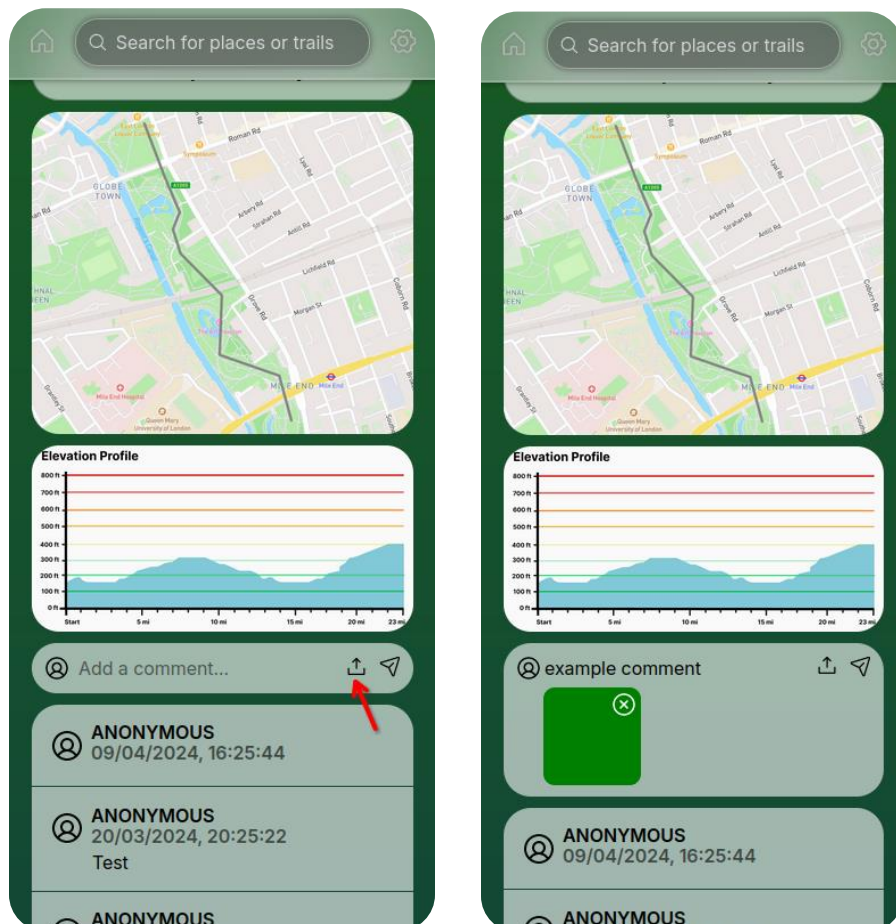
The main purpose of the comments feature is to allow users of the app to provide live updates on trail conditions to fellow hikers, as well as providing tips. The ability to include images with these comments would allow users to show pictures of the trail **providing a visual look** at the current conditions.

Implementation

This functionality would be accessible using a button to attach an image next to the send comment button, which will prompt the user to either open their camera or select a picture from their photo library.

The image then appears in the comment box. If the user has selected the wrong image, they can use the remove button to remove it and upload another one. Multiple images can also be attached to the same comment. When the send button is clicked, the comment will be sent with the images that were attached included.

Example



Downloading future weather data

Many hiking trails venture into areas with unreliable or limited internet connectivity. This improvement addresses this challenge by allowing users to download weather forecasts for specific locations in advance.

Hikers can access critical weather information even without an internet connection, ensuring informed decision-making during their hikes. This feature promotes safety by allowing users to be prepared for potential weather changes, especially in unpredictable environments. Downloading weather data in advance eliminates the risk of being caught off guard by sudden weather shifts.

Implementation

Implement a **"Download Data"** button on the location or trail page within the app. Upon clicking the button, users can choose a time frame for the forecast download (e.g. next 24 hours, next 48 hours). Downloaded weather data would be stored locally on the user's device and accessible offline.

Once downloaded it will provide them with a static html file which would display **hourly data** for their specified time period. This makes it usable and skimmable with users already familiar with the format the data is saved as. This page would be similar to the main online weather page, but with extra buttons to navigate between different times in the saved data.

Example



This is an example of what the button would look like, it would be a different colour and stand out to the user, whilst retaining the original design ideas.



This is the adjusted version of the page users will receive when they download future data. The time will be displayed along with an arrow that will allow them to navigate to the next hour of data.

Foraging Information

Many trails feature a variety of plants, some of which can be useful for food or medicine, while others can be harmful if not handled properly. To help hikers understand these plants better and stay safe, we could introduce an interactive guide for each trail. It'll provide information on identifying different plants, ensuring they can enjoy the outdoors without any unexpected mishaps. This can also be especially helpful for longer distance trails in which the hikers would need to be self-sufficient.

Implementation

A list of forage will be displayed at the bottom of each specific trail page, categorising this forage on whether they are safe to consume or dangerous. The image associated with this forage will give the users an easier time identifying them in the wild when they go on the trail. Pressing on each piece of forage would give a more detailed info page, or link to a different website such as a forage guide on how to properly consume and harvest the forage.

Example



This is a very basic example of what this could look like, with basic info on what plants are safe to eat, and others which aren't safe to eat.

5. Contribution

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