ACCESSIBLE.ME

ACCESS YOUR WORLD.

HACKGT 8: Discover Your Craft

Ethan Kang, Vincent Horvath, Pei Yi Chiang, Hailey Ho

Introduction

The world around us isn't built for everyone. Our world is constructed around the idea of "normalcy" and we often take our comforts for granted. Although these developments improve the lives of the majority, many, especially those with disabilities, are left behind - disadvantaged because of the systems around them. As innovation continues to push society towards new technological solutions, it's incredibly important to remain grounded

in our role as a member of the human race - improving the lives of *all* members of society. *Equality-driven* solutions promote social change and inspire underprivileged groups to have a larger voice in our society.

A major step towards accomplishing this goal lies in supporting accessibility for all. Our HackGT project supports this by providing a platform that helps vendors better understand and accommodate individuals with disabilities through the adaptation of their digital resources.

Key Question

How can we utilize technology to improve the quality of life of people with disabilities from a community-based standpoint?

Inspiration

Coming into HackGT 8, we agreed as a team that we wanted to target either a social good or sustainability project. Especially with this opportunity to work alongside amazing people, in addition to the support offered by the HackGT team, this was an excellent time to work on a project that could potentially improve people's lives.

Preliminary Research

Prior to developing a technological solution to this problem, it was critical to understand the obstacles those with disabilities face in their day-to-day lives. To do so, we began by examining the CDC's list of common barriers faced by people with disabilities. By identifying key issues like transportation, physical, and communication barriers, we were able to identify a scope of problems to target. We also researched accommodations mandated and recommended by the US Government under the ADA (Americans with Disabilities Act), allowing for us to analyze what steps companies and employers need to be taking to provide accommodating environments for all.

Existing Solutions

Before creating our app, it was important for us to recognize the functionality and support already provided by preexisting solutions. Acknowledging this would allow us to focus our time on issues that currently do not have effective solutions, as well as leverage existing ones to amplify our impact.

Access to Information

Although platforms that support mapping functionalities often have general location information listed, such as delivery and curbside pickup options are listed on Google Maps, we found that information that is crucial for people with disabilities is often overlooked and cannot be found on these websites. Such information include whether service animals are allowed, ASL accommodations are provided, and even the most basic accessible parking information. Therefore, we researched on the services that are most important to people with disabilities and tried to display this information on our website as clearly as possible.

Colors

With our web app focusing on improving the lives of those with disabilities, accessibility and accommodations were paramount while designing our user interface. In order to effectively implement an accessible interface, we researched and avoided specific color combinations that are often problematic for those with color blindness. We learned about the most common color blindnesses, for example, deuteranomaly is the most common type of color

blindness which makes green look more red. Protanomaly makes reds look more green, while protanopia and deuteranopia makes differentiating between red and green very difficult. This would be important information to consider when designing our solution

Readability

Next, we needed to identify aspects that would improve the readability of our application for all users. During our development cycle, we spend much time tinkering with different font sizes, families, and thicknesses in order to provide the most readable text for our user base.

Animations

Eye-catching animations are seen in almost every application these days; they capture the user's attention and provide interesting features to observe. However, these animations can often be distracting and hinder the user experience of those with visual disabilities.

Design Specifications

With our research finished, and a plethora of design goals, accessibility standards, and inspiration racing through our minds, we began developing our application. During the design process, we made numerous decisions based on our goals set out during our initial brainstorming and research sessions.

General Design Specifications

Our use of colors, or lack thereof, was a conscious design choice by our team. Maintaining a high contrast environment throughout much of our application allowed us to adhere to accessibility standards while preserving an elegant and clean user interface.

Throughout our web app, we utilize sleek and clear font families and large font sizes to allow for better readability. In addition to this, we set up the framework for several other readability options in our program, such as toggles for larger text and increased color vibrance.

As discussed in our research section, we believe animations are stylish, but often impractical when creating accessible web applications. Therefore, we worked to minimize the number of overwhelming animations seen by the user, electing for simple fade and minimizing animations, or avoiding their use altogether. We also began creating a toggleable option for disabling all animations.

Individuals with Disabilities

- Easy to navigate user interface
- Accessibility accommodations for website navigation
- Accessibility rating system

Vendors

- Information upload form
- File upload system

Technical Aspects

Since our website mainly serves users with disabilities, we decided to focus on polishing the frontend interface and functionalities to make our website more accessible to users.

Front End

As stated above, we strived to keep our front end as sleek and clean as possible. While we employed some animation techniques, most of our front end consists of elegantly crafted panels and components. One of our major achievements on the front end of our application is the fully functional map, built to scale alongside our application, allowing for vendors from all over the globe to be represented.

Back End

We wanted to keep our backend simple, maintaining our storage through a Google Firestore database, and representing each vendor as an object that could be queried by the client. The most difficult problems we solved while developing the back end of our application were relaying information, managing Javascript promises, and representing vendors as JSON objects.

What it Does

For Individuals with Disabilities

The main map features multiple layers for a variety of viewing experiences, In addition to color-coded and uniquely shaped icons which represent important landmarks in their location such as transportation hubs, shopping centers, and public parks.

Hovering over these landmarks reveal the name of the location, address information, as well as an easy to understand 5-star rating system based on the accessibility of the location. Clicking on a landmark reveals additional accommodations provided by the location, which is similarly reflected in the right hand side of the webpage. This simple-to-read interface provides the key information for those with disabilities to choose to visit locations that are most accommodating to their conditions.

As discussed earlier, designing the user flow for those with disabilities consisted of adhering to accessibility guidelines and providing a simple and clean interface for our users to interact with, which was reflected in our final product. From the beginning and throughout the web application, this theme continues throughout our application, with intuitiveness and simplicity driving our design choices.

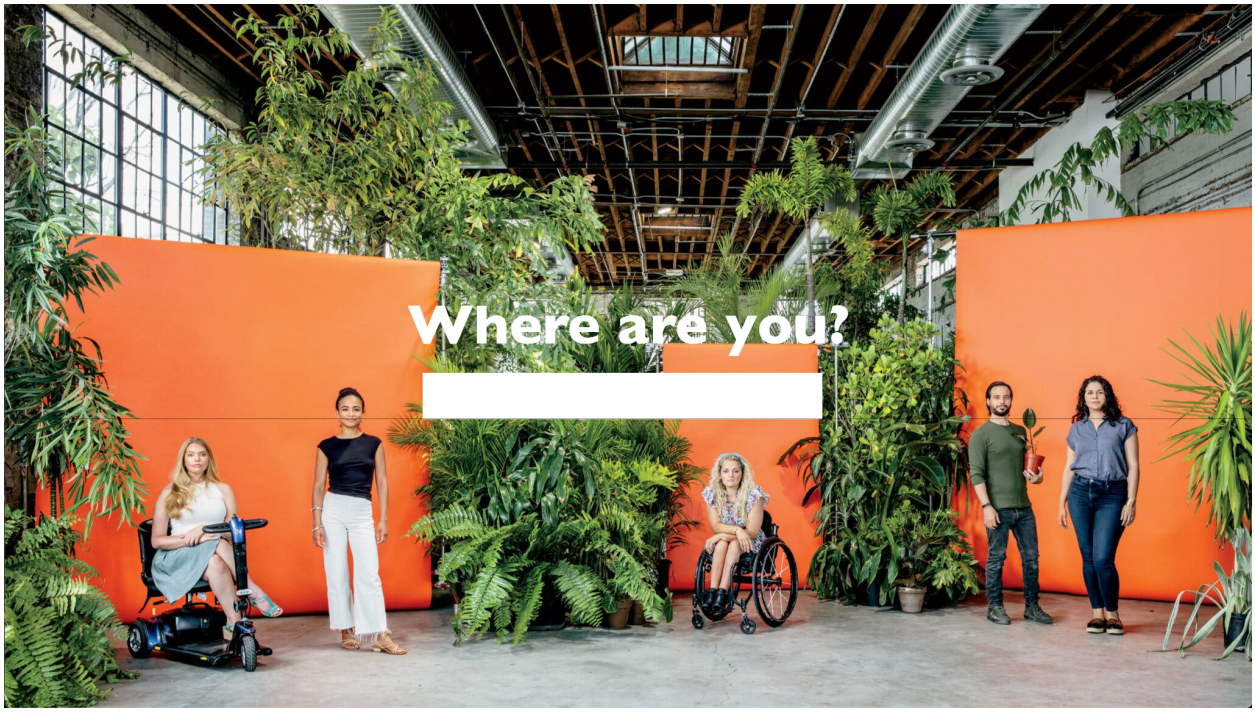
Vendors (local businesses, public services, etc...)

For vendors, we hope to provide a platform that not only features their advocacy for inclusivity but also promotes awareness of potential disability accommodations to better serve their local community. Businesses and vendors can provide information about their venue and specify their accommodations through a form on the web app. The form takes in name, address, and their available disability accommodations. Additionally, they can provide images of potentially helpful information about their venue.

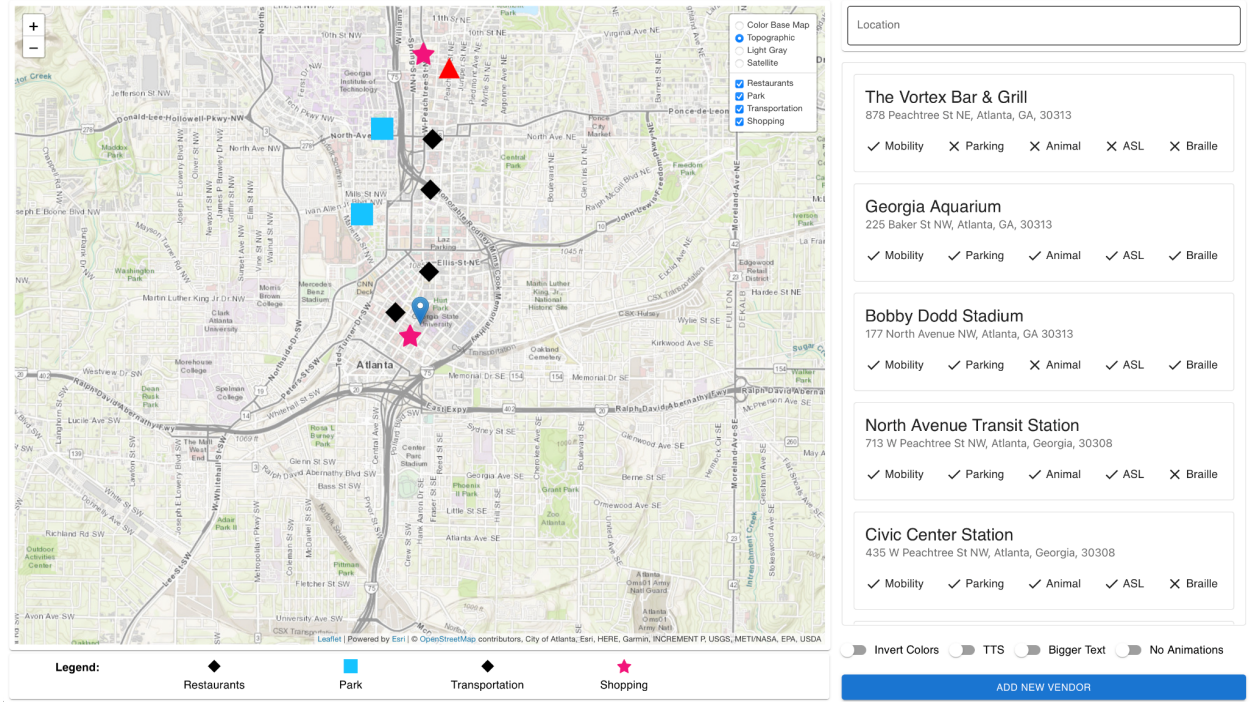
When designing user flow for vendors, our priorities were grounded in functionality and efficiency. As an app, we recognize that vendors must believe it worthwhile to interact with our service, and therefore, an easy and straightforward flow, often taking under a minute, was essential to opening the door to possible adaptation by companies.

Screenshots

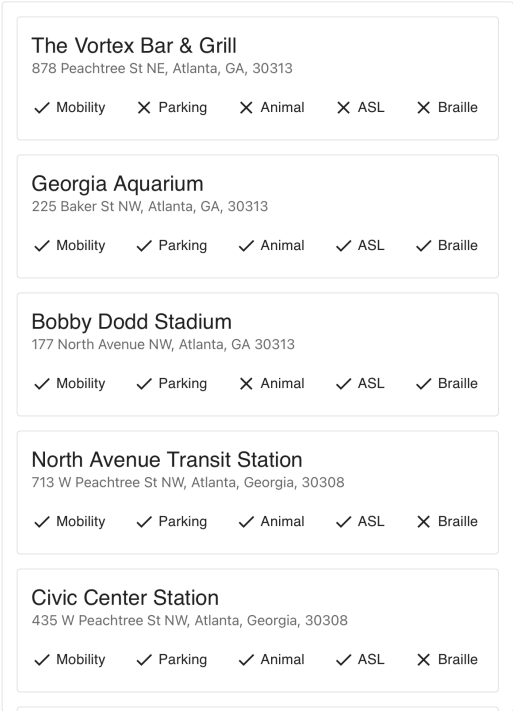
Introduction Screen to Accessible.me



Location Input

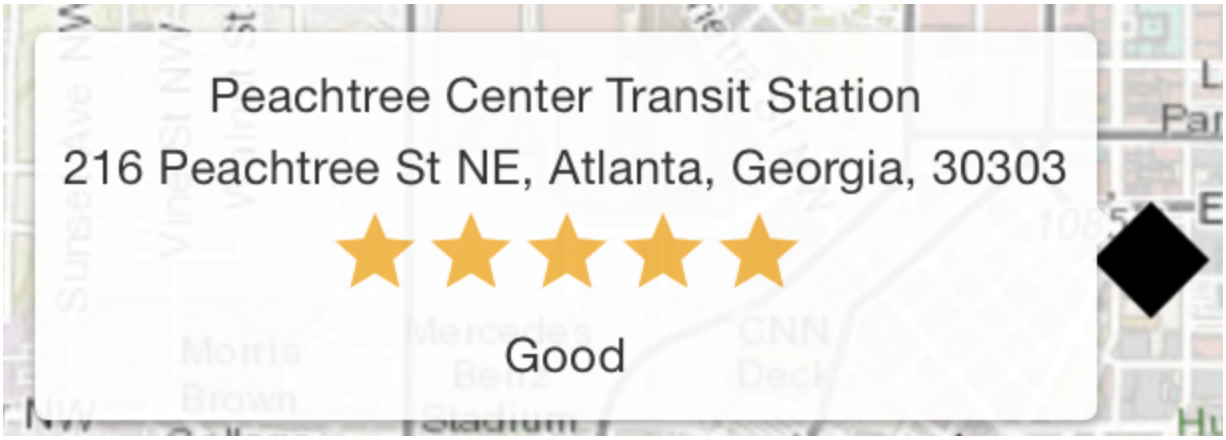


Overall Map Screen

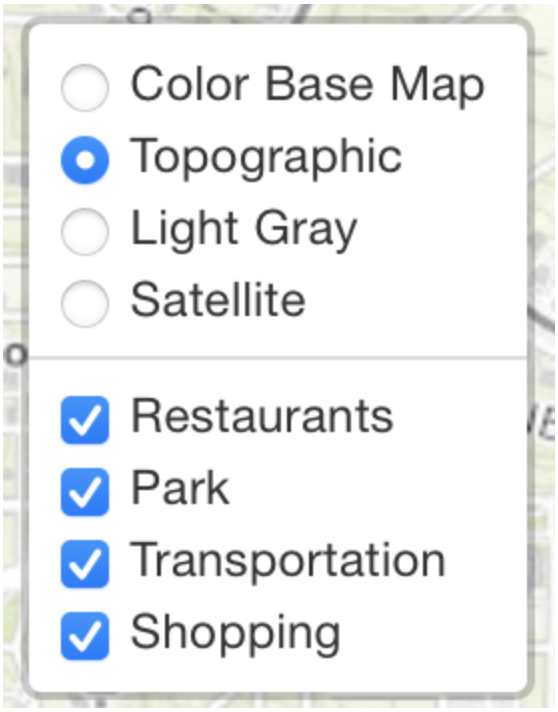


Search Results Side Pane

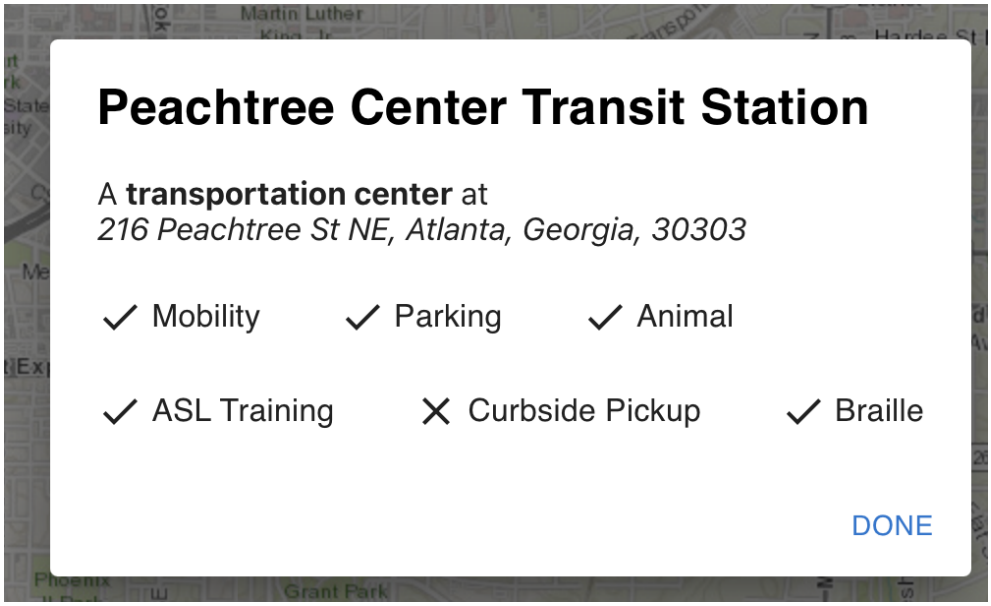
Map Legend



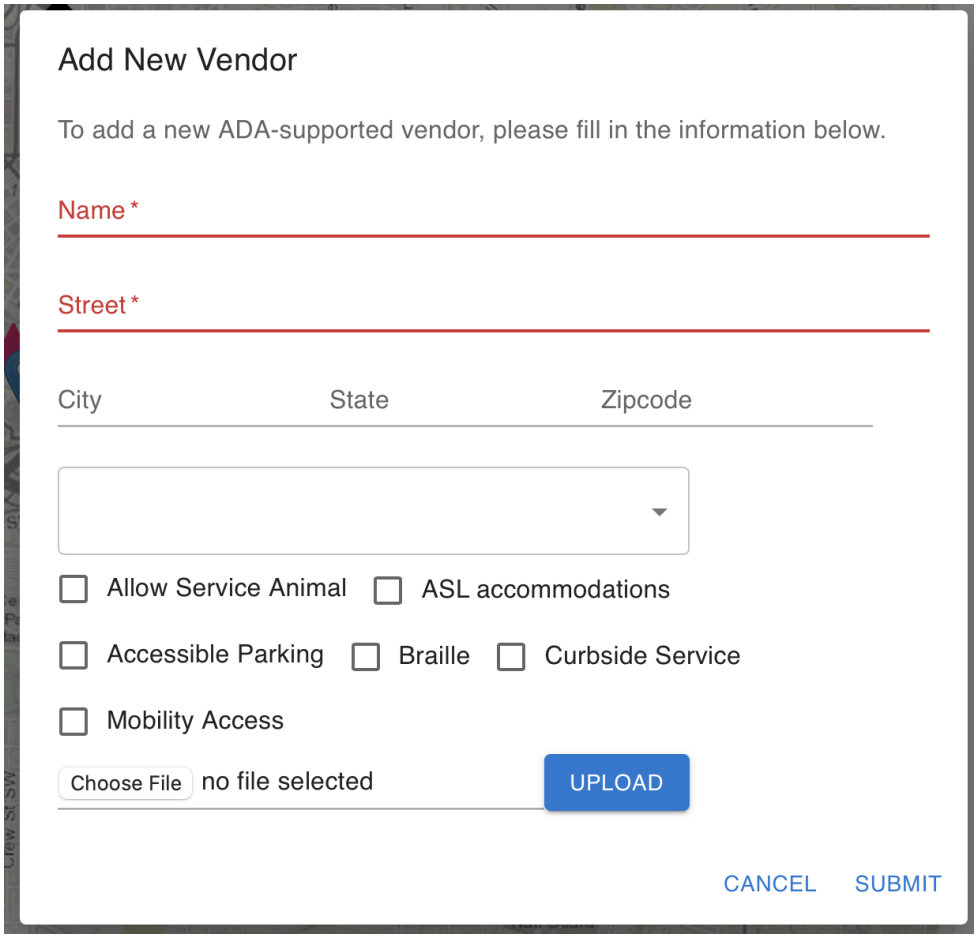
Vendor Hover-over Behavior - Info Popup



Map Layer Control



Vendor Popup



Add Vendor Popup

Reflections

Our application appeals to two main demographics: those with disabilities, and vendors tailoring their services towards these people. Therefore, while creating our app we needed to design and implement two distinct user flows for each of these parties.

Challenges

Conceptually it was hard for us to pinpoint the exact needs of people with disabilities at first, but after extensive research on the difficulties that they face in their everyday life, we constructed a list of services that they might need and expanded our design based on that. Additionally, it was challenging to learn new concepts at the same time as applying it to our hackathon project. This resulted in a realization and questioning of the feasibility of some of our planned features, which unfortunately did not make it into the final submission. It was in our best interest to choose the most important features that needed to be implemented in the final solution.

Accomplishments

Our final product was very nice to look at and minimal bugs remain in our final submission. The overall experience from beginning to end was seamless and accomplished our goals for the two user groups.

Specifically, the map was a resounding success. Multiple ways of interactions with map and vendor objects were made possible, thus making it very easy for an end-user to learn and navigate through the web app.

What We Learned

One of the most important things we learned was the extensitivity and variety of disabilities, as well as an equally staggering but assuring variety of accommodations.

Finally, we gained a lot of technical skills from working on this project. This included better experience with external APIs and understanding web development workflows. Furthermore, we gained a lot of experience with collaboration - a skill that is hard to learn in a classroom setting.

What's Next?

If Accessibility.me continues to make progress, the next goals would be to implement the planned features that never fully made it into the final product. This would include furthering the web app's accessibility features, such as implementing the larger text and inverting colors toggles.

However, as a whole, we strongly believe that this project will help guide us to new future projects and further our drive to continue to contribute to projects focused on social good.