

INFO 4310 Homework 3 Write-up

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Dataset Description

Context

The primary data we used for this assignment was the Yelp Pittsburgh dataset, which contains data points representing points of interest across the city. We selected this dataset over the Boston one since we believe it would be more interesting to represent diverse categories of points of interest, rather than just restaurants and eateries.

Storyboard

See end of the document.

Final Visualization

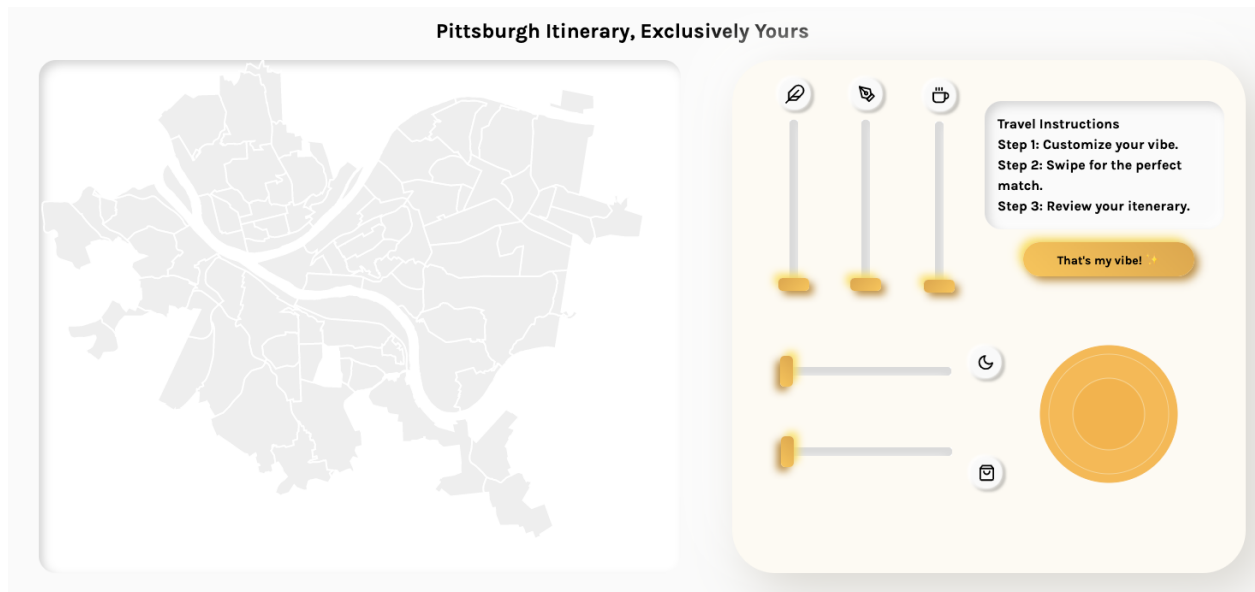
The goal of the visualization is to create a *fun* experience that helps users generate a unique itinerary of Pittsburgh that will fit their personal “vibe”.

The sound system essentially serves as a filter that generates a set of location recommendations for users. We first present users with an interface of audio controls, modeled in a “neumorphic” style of a soundboard. Users are able to play around and adjust the volume according to their personal preference. Each sound corresponds to a category of location (active, nightlife, art, shopping, food). Louder sounds suggest stronger user preference for that particular location category, and more of that type of location will appear in the user’s recommended itinerary as a result. Meanwhile, the change in the location recommendations will reflect dynamically on the map to the left. Once users have tuned to a “vibe” that they feel satisfied with, they can press the “that’s my vibe!” button to save the sound selections and proceed to the next section.

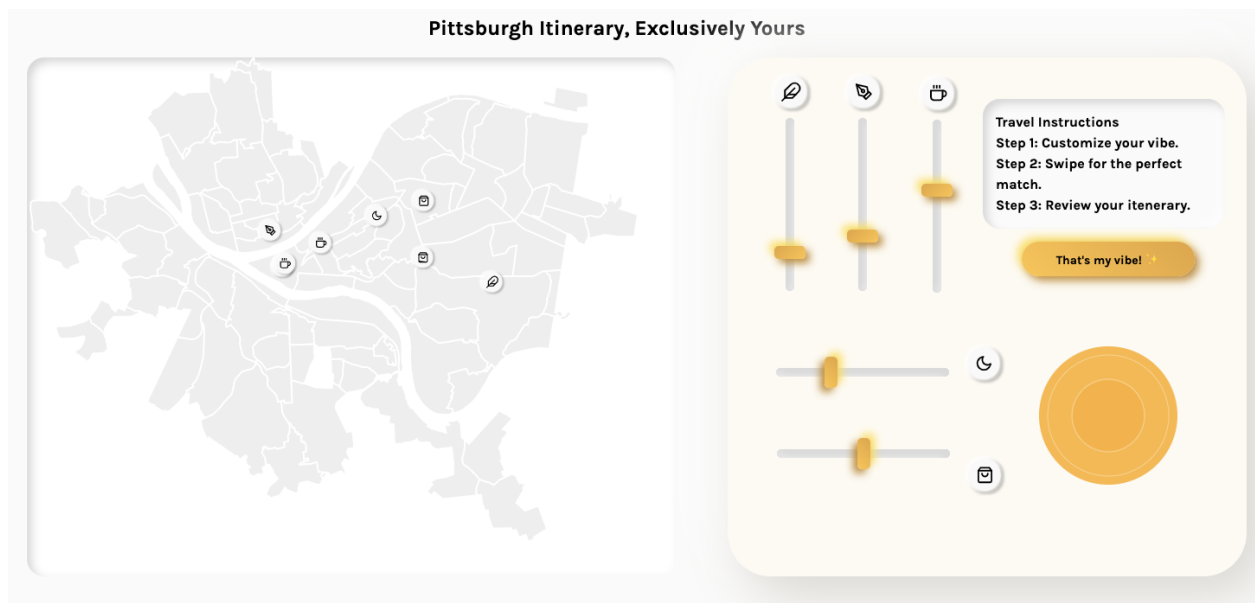
Users will further filter down the locations through a matching process. They will go over each location from the recommendation set individually (around 7-10 locations) and can indicate their preferences by selecting either “yes, I would love to visit” or “nah, not for me”. The locations that users are interested in will be compiled into a list for the final itinerary at the end.

Meanwhile, the sounds that users mixed will continue to play in the background, providing a sense of continuance and adding background ambiance to the experience.

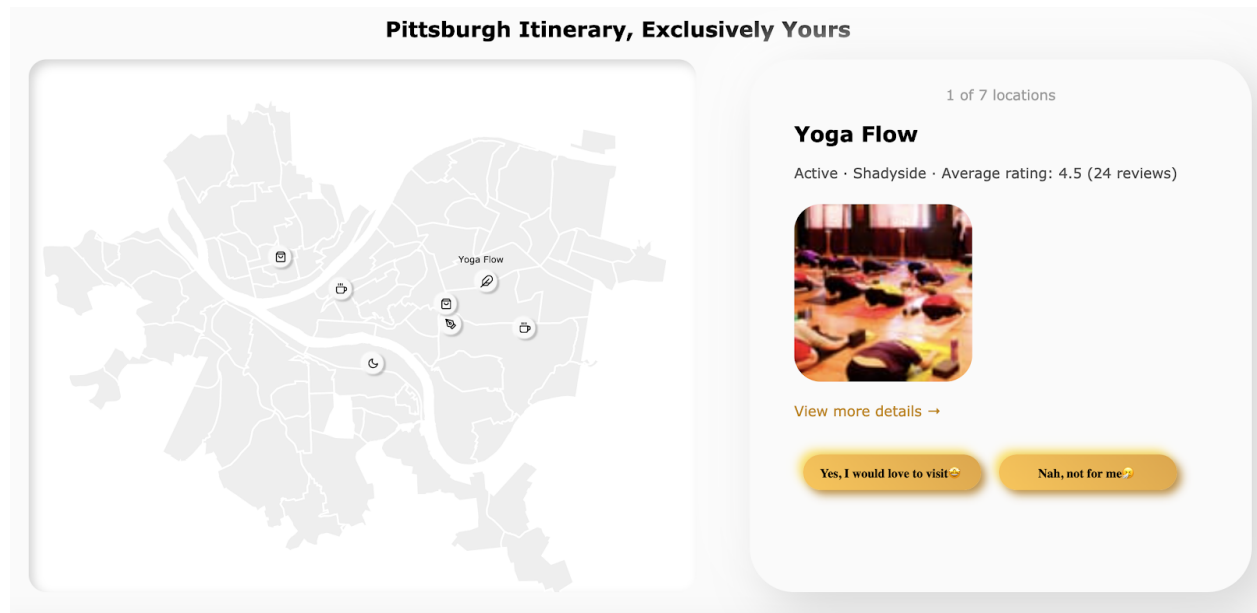
*Some elements positioning might be off on smaller monitors, but the correct view is as below (can also see the correct view in inspect mode)



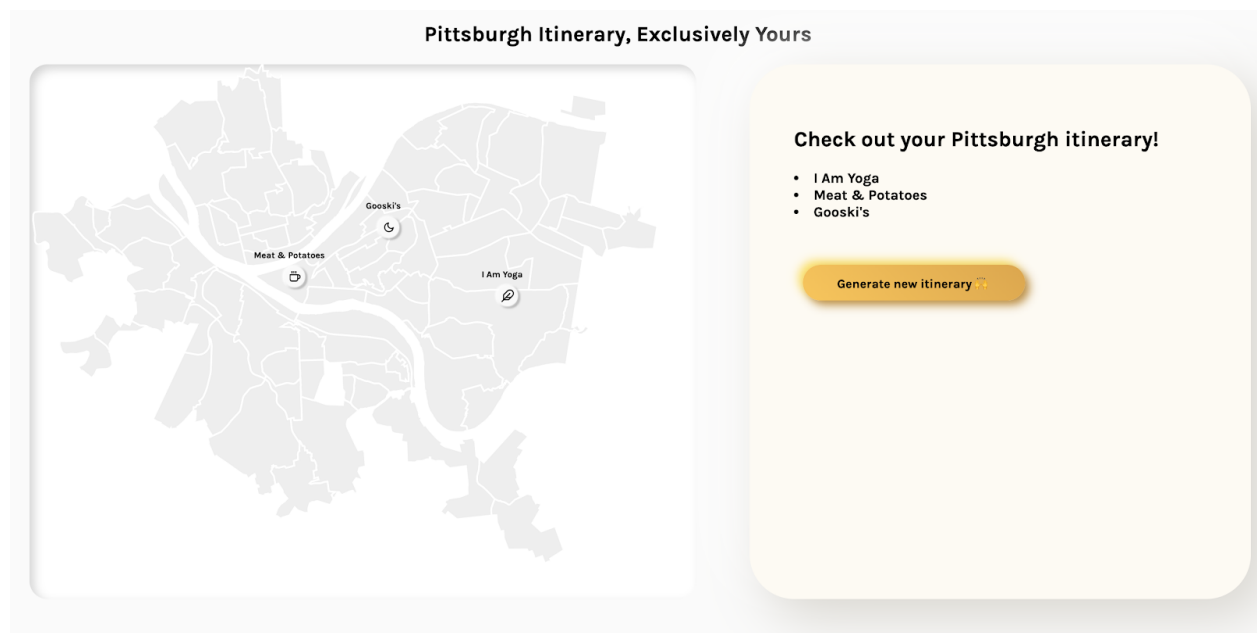
Empty state, all volume are set to 0 by default



Users can adjust the volume control to their likings. Markers for recommended locations will update dynamically on the map as volume changes. The circle on the lower right produces a pulse animation effect that provides user feedback when the sound is playing.



Once users finalize their sound selection, they are able to go through the set of recommended locations one by one, reviewing the details of each location and deciding whether they would like to add it to their itinerary. On the map, a text label will mark out the current location.



After going through all location recommendations, users will receive their final itinerary that contains a list of locations they prefer. Users are able to zoom in on the map when icons and text labels overlap. They may also generate a new itinerary by restarting the process (all the audio will be reset).

Development Process

Brainstorming

We agreed as a team that we want to stay away from recreating a conventional Yelp map and instead build a visualization that is fun to interact with. After brainstorming, we landed on 2 ideas for the project: a filter system that incorporates sound to help users gauge the “vibe” of each type of location, and a matching process that gives users more autonomy by allowing them to go through every single location to indicate their preferences. The main use case, as illustrated by the storyboard, is where users are looking to create a Pittsburgh itinerary through an unconventional approach.

Developing Each Components Separately

We decided to first develop each part of the process individually to make sure that our ideas were feasible. When it was time to combine the two components, our major concern was that the two parts of the itinerary generating process would feel disconnected from each other. How we would combine the two portions then becomes critical to providing a cohesive experience to users.

Joining the Two Components

After more discussion, we decided to use the map as a liaison between the sound component and the quiz component. As users play around with the volume controls, they are able to see icons of corresponding locations emerging on the map. Once they finalize the sound selection (hence location recommendations), the same set of location icons on the map will carry on to the matching component, hence creating a sense of continuance in the experience. It then also became very clear to users that the locations they are going through are generated from their own sound selection, not randomly picked by the system. We also appended simple text instructions on the top right corner to provide further explanation to users.

Adding a Pan and Zoom View to the Map



Initially, the map is a fixed view that shows all of Pittsburgh. However, when showing the result locations on the map, text labels and icons for locations that are close to one another appear cluttered and makes location names difficult to identify (see above). To fix this issue, we applied a pan and zoom view to the map that allows users to zoom in to see information more clearly. Due to technical constraints, the issue is not perfectly resolved as some longer text labels still overlap in certain edge cases, but is definitely an improvement from the first iteration. To prevent users from zooming in too much and getting lost on the map, we constrained the scale of zoom to [1, 2.5].

Design Considerations

Generating Locations Randomly in Each Set

As discussed in the development process above, the volume of each type of sound corresponds to the share of that location type in the recommendation set. There are several ways that we could use to curate locations for each category in the recommendation. For example, we could curate the top rated restaurant only. However, this means that users will likely get a similar itinerary every time, and the “replay” function in the experience then loses its purpose. Therefore, we eventually decided to curate these locations randomly. This randomness introduces a playful, I’m-feeling-lucky feel to the interaction, which complements the experimental experience and visual design well.

Indicating Current Location on the Map

In the matching process, users are able to see where the current location is on the map. The location marker will be indicated by a text label. Sometimes, a text label could be near two locations icons and it becomes difficult to identify exactly which icon the text label corresponds to. We considered adding more visible indications to differentiate location icons, such as by stroke or colored highlight, but were concerned that adding too many visual channels would add visual clutter to the map. Additionally, location is only one of the many factors that users will consider when deciding whether to add the place to their final itinerary. Therefore, we decided to leave the text label as it is and did not add additional treatment.

Map Pan and Zoom

As mentioned above, to prevent users from zooming in too much and getting lost on the map, we constrained the scale of zoom to [1, 2.5]. With this constraint implemented, there was less of a need to add a mini window in the corner that provides an overview of where users are on the map.

Accessibility

Admittedly, the interaction is less friendly to users with hearing disabilities, as the first portion of the interaction heavily relies on sounds. However, the interaction is still usable to audiences with

hearing disabilities, as they can treat the audio controls as regular filters that change the number of locations on each category and can still observe the dynamic update on the map.

Providing Feedback

We added a pulsing animation to mimic a real life turntable and provide visual feedback to indicate sounds are playing.

Visual Design

For visual design, we applied a neumorphic UI style to deliver a fresh and unique experience to users. With drop shadow effects, the call-to-action buttons appear to protrude from the background while the map is “pushed into” the screen. This visual metaphor is intended to mimic a real music turntable, where users are able to adjust physical audio controls. To mitigate visual accessibility issues associated with this soft UI style, buttons are painted with high-contrast action colors.

Edge Case Consideration

It is possible that users might save their sound selection and continue to the matching process without turning up any volume at all. We wanted to make sure that users are still able to create an itinerary regardless. Therefore, instead of disabling the action button, we curated a set of random locations so that users would proceed to later parts of the interactions.

Image Quality

Since the primary goal is to help users gauge a sense of the “vibe” for the locations they will visit, images will play an essential role. Sadly, the images provided by the dataset are all low quality, so we tried to display the images in smaller sizes but still made sure that they are visible. A better alternative would be to work with Yelp API to pull more high-resolution images, but we were not able to implement that due to time constraints.

Sound Selection

We made sure to choose royalty-free sound tracks that are simple and compatible to one another. That way, no one particular sound will overpower the rest, and the mixing of all tracks will still sound pleasant. See the end of the document for sound credits.

Team Contribution

Lesley

- Sound portion, connecting the sound and matching components (5+ hours)
- Brainstorming + meeting (5 hours total)
- Data processing
- Styling

Michael

- Brainstorming + meeting (5 hours total)
- Matching portion (3 hours total)
- Write-up (1 hour)
- Styling

Maggie

- Brainstorming + meeting (5 hours total)
- Matching portion (3 hours total)
- Map pan + zoom (1 hour)
- Write-up (2 hours)
- Styling

Credit (audio links)

Active (water, wind, trees)

https://www.zapsplat.com/?s=nature&post_type=music&sound-effect-category-id=

Arts (classical music, jazz, opera)

https://www.zapsplat.com/?s=jazz&post_type=music&sound-effect-category-id=

Food (bowls, coffee machines)

https://www.zapsplat.com/?s=restaurant&post_type=music&sound-effect-category-id=

Nightlife (bouncer, traffic, EDM music)

https://www.zapsplat.com/?s=nightlife&post_type=music&sound-effect-category-id=

Shopping (People walking and talking)

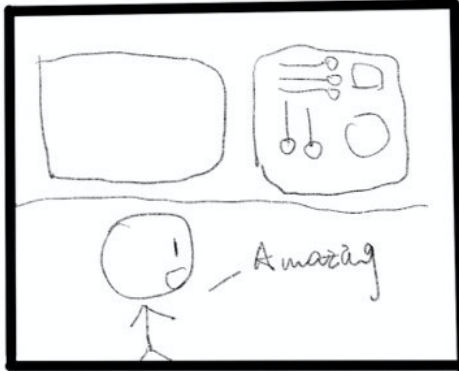
https://www.zapsplat.com/?s=shopping&post_type=music&sound-effect-category-id=

Discovering the need



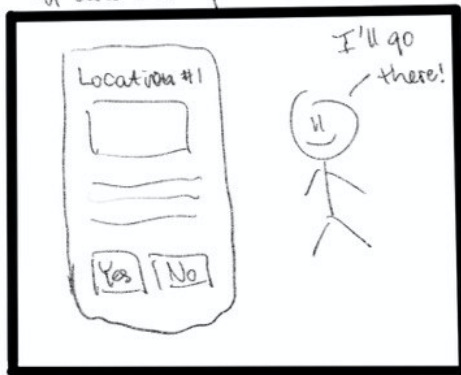
The user has the need of creating an itinerary for her trip.

Seeing the interactive itinerary.



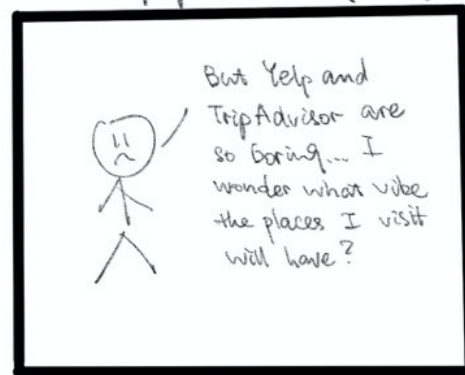
The user finds the interactive itinerary suitable to her need.

watching



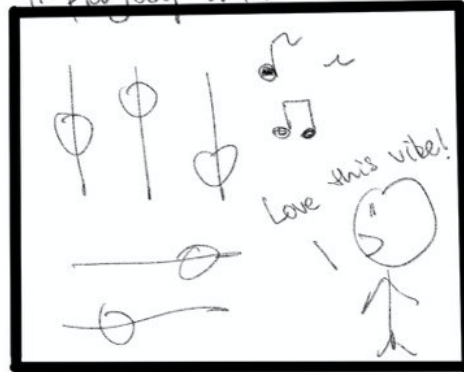
The user finalizes her itinerary through watching

Looking for something unique



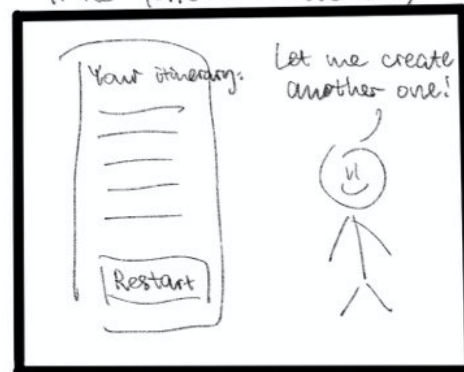
Looking to gauge the "vibe" of the places.

playing with sounds



The user adjusts the audio control to find her vibe.

Re-generate itinerary



User can restart the itinerary creation process.