Eden Prairie Playgrounds Web map App

Executive Summary by Brian Strock – GEOG 778 – Spring 2022

# Executive Summary

## Abstract

Through completing my Capstone Project, I was able to successfully launch the Eden Prairie Playgrounds web app, which is available at <http://epplay.today>. This project delivers almost all of the intended functionalities at launch and offers a rich user experience for exploring outdoor amenities in Eden Prairie aimed at families with children.

## Features

Several key features of this app make it a unique experience for community outdoor engagement:

* Users are immediately offered an appealing visual overview of the playground locations
* The initial search marker (purple icon) acts as informational surface directing app use
* Individual Playground markers have a rich, interactive Overview and accessible routing buttons

Map

Description automatically generatedGraphical user interface, application

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* A detailed Filter menu makes it easy to search by location or on-site equipment/amenities
* A Search By Name option is implemented to ensure quick access to favorites
* User location can be detected by tapping the middle Floating Action Button to search nearby
* The Location marker can also be dragged to set the Search location
* Reset buttons are available for both the view and the marker position

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## Civic integration

The app features two surfaces which integrate with existing City of Eden Prairie services and offerings. In the User Guide, the Resources tab directs users to several outdoor guidance resources offered by the City’s Parks and Rec department. In addition, each Playground Overview has a link to SeeClickFix, which allows for location-based reporting of civic maintenance issues. The Report button for each Playground directs the user to submit a report at that Playground’s geographic location.

## Data assets

Development of this app required generating two novel datasets. First, I used the City’s Park List website to gather the playground addresses, then geocoded and manually georeferenced the playground sites within their park environments. These polygons were then used to generate XYs which refer to the playgrounds themselves.

The spatial data was then enriched with site-level data on available playground equipment, amenities, and sports facilities. The playground equipment data was gathered by visiting all 29 playgrounds in Eden Prairie with my kids, which made this project fun and rewarding for everyone (and also exhausting). The amenities and sports facilities data were gathered from a mixture of site observation, City of EP data, and satellite imagery.

## Use cases

Several user scenarios and use cases were identified during the development of this project:

* General use: Families in Eden Prairie can use the app to locate and explore the city’s playgrounds
* Visitors: By setting the search location by dragging the Location marker, visitors to Eden Prairie can plan out their trip to include playground time
* Accessibility: Since the app catalogs equipment available on site, users can search for specific needs such as Accessible Swings, Sun Shades, Indoor Restrooms, etc.
* Sports groups: Users interested in specific sports activities may use the app to seek out specific sports facilities, such as Badminton or Foursquare. Users with an interest in Tennis should try this feature, as Eden Prairie has an extremely high number of tennis courts for some reason.
* City planners: Interested planners may use the app to uncover development-related needs in order to address the playground deficiencies noted in the Southeastern quadrant of the city, where playground densification is lacking compared to other quadrants.

## UI/UX Considerations

In developing the app around these user scenarios, several specific user interface goals drove the implementation:

* The app was designed to facilitate quick, easy interaction for new users, with the goal of allowing the tool to ‘get out of the way’ and get the user to their destination as quickly as possible.
* Supporting this goal, the User Guide surface is easy to locate when needed, and is written in short, digestible bullets which reference relevant UI elements (icons, etc.). This surface is also easy to ignore when no longer needed.
* The user’s View is handled with central focus and deliberation. A Zoom To Site button in the Overview surface transfers the view directly to the playground location, while a Reset View button is available to return to the original position.
* The Mapbox Outdoors basetile layer was chosen for its amazing representation of natural spaces and promotion of alternative transit and labeling options.
* The Search Radius is hidden or shown based on zoom level to ensure that the baselayer is visible when appropriate.
* A high priority was placed on the mobile experience. Several app surfaces are designed to render to the size of the device scale, and care was taken to ensure that mobile devices offered a superb navigation and user experience.
* The app promotes city resources and alternative transit methods wherever possible, placing prominence on local search scales and biking/walking navigation.

# Technology Stack (detailed)

* **Backend:** The data was stored in a PostgreSQL database with PostGIS for all spatial querying. An API was written to allow for arbitrary queries against the database, including spatial queries. The API was implemented in Python 3.9 using FastAPI and SQLAlchemy.
  + *Code base:* https://github.com/bstrock/playground\_planner
* **Frontend:** The User Interface was then developed using the React framework, with map components from Leaflet using the react-leaflet bindings library. Material UI was chosen as the component library for interface elements. These selections proved to be highly serviceable, flexible, and well-documented, which made for an engaging development process.
  + *Code base:* https://github.com/bstrock/eden\_prairie\_playground\_finder
* **Hosting**: The API and database were both launched using a Heroku free-tier subscription. The website was hosted using Github Pages, and a custom domain was configured using Google Domains.

# Service delivery model (GRAPHIC)



# Conclusion

I believe that I have successfully developed an app that fulfills the vision I had in designing this application. The app is easy and fun to use, and provides a useful service that my family will use for years to come. In addition, I think other users in the community will find it useful as well, and I plan to submit the app to the city’s Parks and Rec and City Maps & GIS departments for feedback and discussion.