

Reiman Garden Butterfly Interpretation Application Project Plan

DEC1608

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1 Introduction

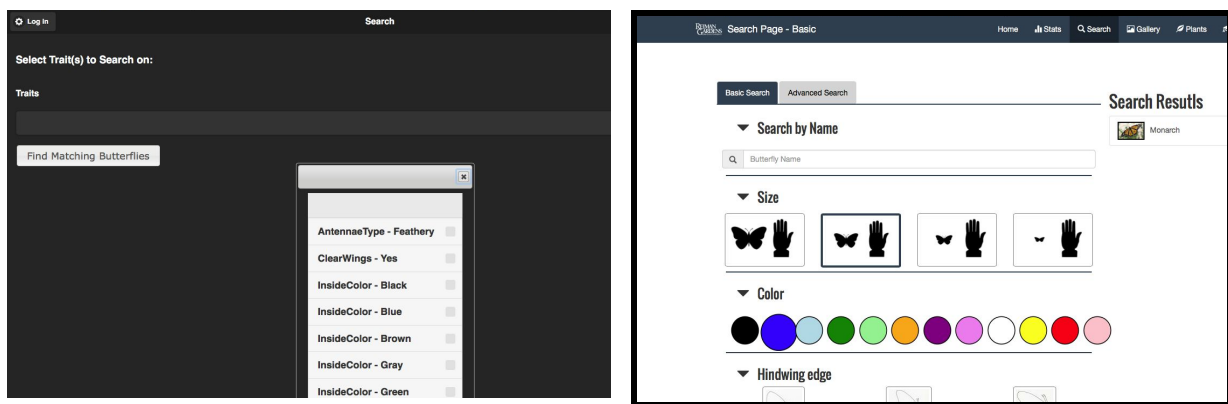
1.1 Project statement

The goal of this project is to create a web-based application for the Reiman Gardens butterfly wing. This app will be able to search for any butterfly in the database based on trait or name, show a gallery of butterfly pictures, have a homepage with information on the butterfly wing, and show facts and statistics on butterflies and current state of the wing. The app needs to be dynamic and able to cater to back-end user input so the pages can be changed based on new butterfly shipments and butterfly releases into the wing. This app will be web-based and needs to be useable on most mobile platforms, enabling visitors to use the app from their personal phone. The app will also be displayed on the kiosks (Figure 2) at the wing and on the tablets that the volunteers use at Reiman Gardens.

1.2 Purpose

The purpose of this project is to replace the current application that Reiman Gardens has with a more user-friendly version. There are several functional problems with the old app, many pertaining to the inability to change information in the current database and an inflexible layout that only looks appealing on smartphones. Many people in the past have wanted to be able to look up information on the butterflies within the wing when they visit, and this app will allow them to do that, improving the visitors' experience.

Figure 1 shows the current app's search page next to our revised version of the search page. Our purpose is to make the site less text heavy and more intuitive to use.



Current

Revised

Figure 1: Search page Comparison

1.3 Goals

The goal of this project is to complete a working web-based application using our coding experience. One major goal is to design the app in such a way that the client is able to easily add and change the data the app operates on and to allow the client to customize what information is viewable to visitors. This will enable our client to more effectively communicate his knowledge and information to the public in an engaging way.



Figure 2: Kiosk inside the butterfly wing on which our app will run

2 Deliverables

The main deliverable required to meet the goals of our client is an application that can show information about butterflies to the Reiman Gardens visitors in an easy-to-understand and engaging manner and whose information can easily be modified and updated by the client. This means the ability to change pictures, statistics, butterfly information, search tools, and potentially how each web page looks. The greater purpose of this app is to adapt to the visitors' wants and needs when it comes to the butterfly wing. This app should allow the client to adapt more quickly.

This app will replace an existing app, which had some shortcomings. The most notable shortcomings that will be fixed are unchangeable information, inflexible layout, and search ability. Currently several statistics are unchangeable by our client. (Most notably the current number of butterflies in the wing is fixed at 763.) The page layout of the app works reasonably well for smartphone devices. However, when viewed on devices with a larger screen, the entire interface is stretched leading to a very unappealing layout. In this updated version of the app, layout should adapt dynamically to screen size rather than simply stretching to fill the area. Finally, the search interface consists simply of a long list of checkboxes of traits. While technically functional, this is awkward, and a new search interface could make searching for butterflies significantly easier.

3 Design

3.1 Previous work/literature

3.1.1 Initial Website Design

During the creation of the first Reiman Gardens butterfly wing kiosk, the client, Nathan Brockman, created a series of documents detailing conceptual layouts of the web application.

[Link to concept designs](#)^[1]

3.1.2 Initial Website Feedback

After the initial web app was created, Nathan conducted a survey, for which he recorded the most relevant comments.

[Link to educator survey screenshot](#)^[2]

[Link to user survey screenshot](#)^[3]

[Link to feedback](#)^[4]

3.1.3 Similar Implementations

The Shedd Aquarium, located in Chicago, has implemented a similar interface for several of their exhibits. According to the Vice President of Learning at the aquarium, the application is designed to improve engagement with visitors.

[Link to article on Shedd Aquarium's app](#)^[5]

3.2 Proposed System Block Diagram

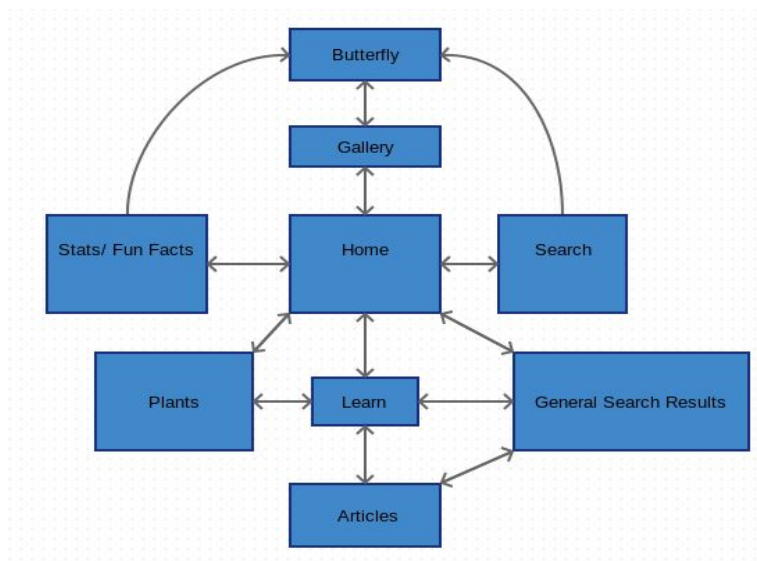


Figure 3: Web site map

3.3 Assessment of Proposed methods

The approaches for developing the front end of a web app are rather limited. The front end is mainly restricted to HTML/CSS/JavaScript. There are a few extra frameworks and libraries that can be used here such as Twitter Bootstrap, JQuery, and charts.js.

Our current approach for creating a web app that is viewable on all devices is to use the Twitter Bootstrap framework. This framework will ideally take care of adjusting the web page to the relevant screen size with minimal effort.

The server side environment has many more options available, and we are still evaluating which approach to use. Some options we have considered include Go, PHP, Ruby on Rails, Javascript (Node.js), Scala, and Java Spring.

3.4 Validation

Our plan to evaluate the effectiveness of the app is to run versions of the app at the butterfly wing and get user feedback. Our goal is to have the visitor version of the app operational by the beginning of summer. The app can then be run in the butterfly wing, possibly alongside the existing app. The visitors and volunteers' feedback can then be collected and the application can be reviewed the following fall.

Evaluating the administrative side of the app will be a very similar process. We hope to provide our Reiman Gardens representative with prototypes as we develop and get his opinions on what works well, and what still needs to be fixed.

4 Project Requirements/Specifications

4.1 Functional

Visitor Requirements

1. Visitor must be able to look up a butterfly based on physical traits
2. Visitor must be able to view statistics about the current state of the butterfly wing
3. Visitors must have access to a photo gallery

Potential Additional Visitor Requirements

1. Social Media check in
2. Submit photos to Remain Gardens

Administrative Requirements

1. Admin must be able to quickly and easily log a butterfly release
2. Must be able to add/edit/remove butterflies to/in/from the system
3. Must be able to add photos of butterflies to the system
4. Must be able to set a butterfly of the day

4.2 Non-functional

1. The web app must be aesthetically pleasing for the viewer and render well on all screen sizes.
2. The web app should be intuitive to use by visitors of all ages and by volunteers in the butterfly wing.

5 Challenges

Cost - The group does not foresee cost being any issue because Reiman Gardens already has the technology needed for this project to be finished (kiosks, computers, tablets, and internet connection).

Materials - There are already plenty of resources for this project because Reiman Gardens has a current application running, so they have data, surveys, and technology we can reference in developing our project. In terms of storing information electronically we have a repository set up and will have a database to use for data input from our client.

Knowledge of Area - The biggest problem for the group in terms of knowledge is coding experience for a web-based application that can also transfer over to a mobile platform. Also catering to the client's needs is something that can bring up problems, so there will be multiple layout and design changes throughout the project. The group also does not have much back-end experience so there could be challenges with setting up and maintaining a proper database that is easy for our client to update.

Scope - The problem with the project being so open-ended is that many fun and exciting features for the app can be envisioned (social media, live video feed, etc.), but our team has limited time and needs to finish within two semesters. The presence of a former app helps us as a team set priorities for our application. As we go forward as a group, we will encounter limitations as to what can be reasonably done with our time, and we will consult with our client for setting priorities. The former app can be used as a guide by looking at how it failed to meet users needs. These needs can then be assigned a higher priority.

using the past app as an example for what matters to the Reiman Gardens visitor.

6 Timeline

Our goal for the first semester is to have a working version of the visitors' side of the application so that we can have it available for visitors and volunteers of Reiman Gardens to test. During the second semester, we will analyze the feedback from the summer and use it to polish the user side, in addition to creating the administrative side of the application.

6.1 First Semester

First sprint

2/22 - 3/11

- Gain experience with tools
- Work on prototyping individual pages:

Web page (Desktop/tablet layout)

- homepage
- photo gallery
- search page
- stats page
- butterfly information pages
- education page

Second sprint

3/21 - 4/1

- Set up database
- Backend support
- Standardizing look and feel between pages

Third sprint

4/4 - 4/22

- Set up mobile version
- Finalizing user side for beta testing
- Setup place to host

April 22 Deadline

- Working visitor side
- Release application for beta testing

6.2 Second Semester

(Specific sprints TBD)

Analyze feedback from over the summer

Polish visitor side of application

Set up administrative side (writing to the database)

- adding new butterflies to database
- recording reception/release information
- statistics selection

6.3 Gantt Chart

The chart below gives a graphical representation of what tasks we will be accomplishing and when.

Sprint	1 (2/20-3/11)	2 (3/21-4/1)	3 (4/4-4/22)	4/22 Deadline	S2 Tasks
Task					
Gain Experience	█				
Prototype individual pages	█				
Set up database		█			
Backend support		█			
Standardize pages		█			
Set up mobile version			█		
Finalize user side			█		
Set up place to host			█		
Release application				█	█
Analyze summer feedback					█
Polish visitor side					█
Set up administrative side:					█
Write to database					█
Record reception/release info					█
Statistics selection					█

7 Conclusions

The main goals for this project are first to create and field a user-friendly application to replace the one currently in use at the Reiman Gardens butterfly wing, and second to improve the mechanisms used by our client at Reiman Gardens to update the information displayed by the application. We are beginning by analyzing material provided by our client to better understand what he envisions for the application. In addition, We are putting together our own prototypes, which will be shown to the volunteers at Reiman Gardens. Based on their feedback, we will move forward with the full application with the goal of having a working version of the visitor/volunteer side complete by the end of the first semester, so that we can release it to be beta tested by the visitors and volunteers over the summer.

In order to accomplish these goals, we have put together a series of two- and three-week sprints for the remainder of this semester, with specific goals to achieve during each sprint. Then when we return in the fall, we will begin by analyzing the feedback provided over the summer to see where we can improve the visitor side of the application. Our other goal for the second semester will be to create a practical and user-friendly administrative side for the application, which will allow the Reiman Gardens personnel to insert and edit information. By the end of the fall semester we intend to have a fully functioning application that will replace the current Reiman Gardens butterfly application.

8 References

Current Reiman Gardens application: <http://rgbutterflyapp.com/>

Lucid (trait-based recognition): <http://lucidcentral.org/en-us/home.aspx>

Project Website: <http://dec1608.sd.ece.iastate.edu/>

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2. <https://drive.google.com/file/d/0B1i3EJYIaY6JaWcyOXN4TDA5Slk/view>
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4. <https://drive.google.com/file/d/0B1i3EJYIaY6JVHhNlIVZDI2Slk/view>
5. <http://www.chicagotribune.com/bluesky/originals/ct-shedd-aquarium-ipad-app-bsi-20151005-story.html>

9 Appendices

(Currently no appendices)