

# Senior Design Final Report

## Thearqive: LGBTQ Storytelling App



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# 1.Introduction

## 1.1 Background:

The arqive is an online digital storytelling map dedicated to LGBTQ+ narratives, offering a collection of queer stories that are geo-located and digitally preserved. Dr. Cynthia Wang established this platform in 2014 and was later joined by co-founder Zachary Vernon in 2019. The platform serves as a space where individuals can share personal, historical, and community stories while accessing information about safe spaces. It functions as a digital archive of past and present movements, personal experiences, resources, and organizations from around the globe. The arqive aims to both create and collect these stories and resources, serving as a testament to the importance of the LGBTQ+ community.

The arqive's primary mission is to empower LGBTQ+ individuals to map out and share their stories, providing them with a meaningful place in both the world and history. The archive is available as both a web and mobile application. This marks the fourth year of the arqive's evolution as a senior design project. In 2020, the project debuted with the launch of the website. The following year, in 2021, the development team introduced a mobile application for both Android and iOS platforms to complement the website. This year, our team focused on enhancing both the website and mobile app by incorporating additional features and addressing various bugs for an improved user experience.

## 1.2 Design Principles:

The primary emphasis for both the website and mobile application was enhancing efficiency and user friendliness. Our team focused on keeping features and navigation aesthetic and minimal to prevent overwhelming users. The mobile app was designed to mirror the website both visually and functionally, offering a consistent experience across both platforms. Accomplishing this was important as we did not want users to become confused when switching devices.

## 1.3 Design Benefits:

Thanks to the design team's efforts, the website is visually appealing. Specific fonts were carefully chosen to ensure readability, enhancing the overall user experience. The color scheme and aesthetic were designed to captivate users' attention while remaining consistent with the brand's identity. The UI was made to smoothly show posting of pins. Each section is clearly labeled and easily accessible, contributing to the website's easy navigation and usability.

## 1.4 Achievements:

This year The archive team was split up into two groups. Each group worked on different tasks over the two semesters for maximum efficiency. Towards the end of the second semester groups collaborated on certain tasks as seen fit.

Overall, team 1 was assigned continued development of multimedia upload and the creation of an nsfw (not safe for work) tag. Building on code created by Misael last year team 1 was able to add and finalize the back end using tiny mce. Additionally, Channing created the front end and back end for the nsfw tag from scratch. While the front end for multimedia upload is going to need development from next year's seniors, the nsfw tag will be deployed and ready on the website by the end of this semester. This function is not yet available on mobile due to the groundwork needed not being laid out prior; however, by next semester it should be implemented.

On the other hand, team 2 was assigned securing authentication and adding a block button. Raul worked on authentication over both semesters and was successful in efficiently securing the website. This was extremely important as we do not want user data to be leaked. In addition, Juan and Ryan worked on the blocking function. By the end of the second semester both front end and back end were completely created and ready for deployment. Team 2 also took over mobile development once Dario's contract ended. Hak was able to add things such as profile settings page, a back button, and other small functions.

## 2. Related Works and Technologies

### 2.1 Technologies Used

**Django REST Framework** is a powerful and flexible toolkit for building Web APIs. It allowed the backend of the website to be built as an API which could then be called from the mobile application.

**Web API:Open Street Map** is a collaborative project to create a free editable geographic database of the world.

**React** is a free and open-source front-end JavaScript library for building user

interfaces based on UI components.

**React Native** is an open-source UI software framework that is used to develop applications for Android, Android TV, iOS, macOS, tvOS, Web, Windows, and UWP.

**Digital Ocean** is a cloud infrastructure provider organization.

**Ubuntu** is a Linux distribution based on Debian and composed mostly of free and open-source software.

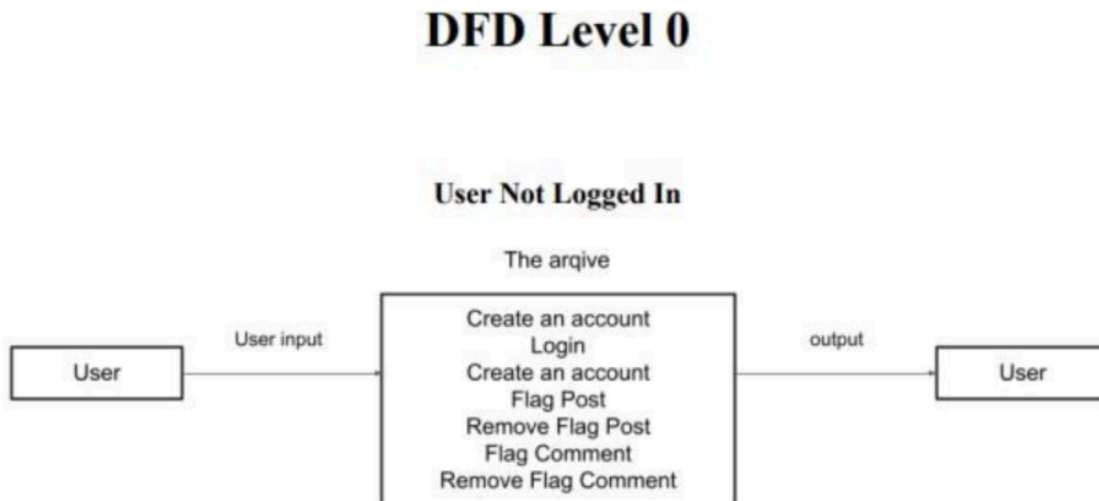
**PostgreSQL** is a free and open-source relational database management system emphasizing extensibility and SQL compliance.

**SciKit-Learn** is a free software machine learning library for the Python programming language.

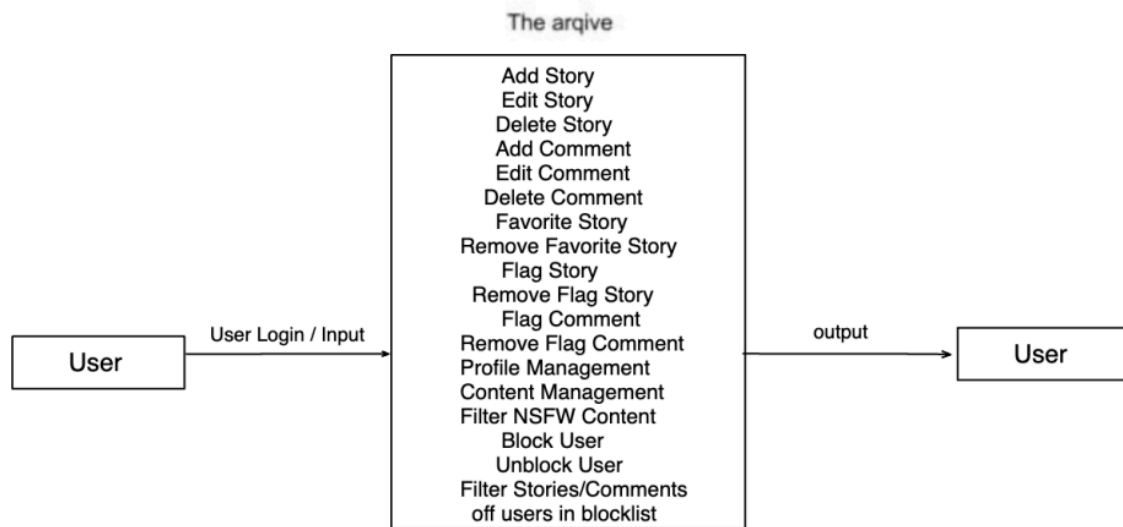
**Ar.js** is a framework for creating a proof of concept for Augmented Realities.

## 3. System Architecture

### 3.1 Overview



## User Logged In



**The User (Administrator):** This user has all of the powers of the user and moderator. Administrators can create and manage moderators.

**The User (Moderator):** This user has all of the functions of a regular user in addition to responding to flagged stories and comments.

**The User (Regular):** This user can create profiles, log in, and if logged in can create, delete, and edit their own stories. They can post comments on other stories as well as flag them if deemed inappropriate. They can use their custom profile page to customize their biography, show their posted stories, as well as show the posts that they have favorited. Any posts the user creates can also be marked as anonymous.

## 3.2 Data Flow



**3.2.1 User Registration:** This allows the user to register with an email address that has not been used before to register and a name. Users must choose a username and password.

**3.2.2 User Login:** This allows a user who is already registered to log into their account. In order to login successfully, users need to solve a captcha. If the user has forgotten their password, an email will be sent to the registered email address.

**3.2.3 User Profile:** This allows users to customize their identity on the website.

Users may upload a profile picture and customize their biography. On the settings page of the profile, users may turn on accessibility features to help navigate the site. They can also now choose an nsfw setting.

**3.2.4 Story:** This module is the pins of our website. Each pin is a title, description, date, and category. It also has an optional anonymity radius. The description allows for formatted text and images. Stories may be created, favorited, tagged, flagged, or made anonymous by users who are logged in.

**3.2.5 Map:** The module hosts the map where all the pins go. If the user allows the website access to their current location, it will center it. The map allows you to right-click on a location to post a story or enter an address manually using the add story button.

**3.2.6 Comment:** The comment module allows people to interact with the story by letting them post messages on the stories. Comments that do not comply with the website's and mobile applications' Terms of Service can be flagged by the user and reviewed by a moderator or administrator.

**3.2.7 Database:** This is where all the user and story information is stored.

**3.2.8 Manage:** This Module lets you manage your posts, favorites, etc.

**3.2.9 About Us:** A module that tells about the main identity of the archive.

**3.2.10 FAQ:** This shows the most frequently asked questions and allows Moderators and Administrators to add questions.

**3.2.11 Contact Us:** This module allows users to ask more specific questions that are not on the FAQ.

**3.2.12 Resources:** This provides many different hotlines for the LGBTQ+



community.

**3.2.13 Support Us:** This module gives users a way to support the archive by donations

**3.2.14 Terms of Service:** This allows the users to view the terms of service of the website and mobile application.

## **3.3 Development and Implementation**

**3.3.1 Database and Data Storage:** The PostgreSQL database is being held in a DigitalOcean managed database with its own host. When a user starts performing tasks on the website that has a field in a table of the database, that data will then be stored. A backup of the DigitalOcean is created in case the host cannot be contacted.

**3.3.2 User Interface:** The user interface is designed so that users can see and know exactly what they are doing. The site uses easy-to-read fonts and bright colors to capture the user's attention. Login and Register has improved cluttered layout for ease of use.

**3.3.3 Server:** The website is being held on a DigitalOcean droplet that holds the server in it and interacts with the database.

**3.3.4 Content Moderation:** Began the implementation of a Machine Learning model that can automatically moderate posts being created on the site. For now it is being individually viewed and processed by admin and moderators.

**3.3.5 Location Autocomplete:** implement can present up to 5 locations at a time and suggestions based on the user's current location, also add location

autocomplete functionality to mobile app. Took time to convert locations to the correct format for the database to accept, modified the database to include the new locations, and learned how to interact with various pre-existing APIs to ensure that the feature would theoretically work with any search bar.

**3.3.6 Delete and disown post:** Implement can delete their account while keeping their posts on the site. Dissociate posts from their accounts without deleting their account and have sufficient warning to prevent accidental deletion of their account or posts.

## **4. Results and Conclusions**

### **4.1 Results:**

By the end of the semester most of the goals we set out to complete were completed. Team 1 was able to completely build and deploy the nsfw function for the website which will later serve as an outline for the nsfw function that will be implemented into mobile. The back end for multimedia upload was completed using last year's back end ground work which allows for front end code to begin. Team 2 was able to secure the authentication issue that the website faced over the summer. Additionally, they were able to build the blocking function front end and back end. Similar to the nsfw function this will be used as an outline for how it will be implemented on mobile using react native. Small mobile functions were also implemented by a team mate on team 2. There were many little things that had to be modified/fixed along the way that were not accounted for in the list.

Although the main purpose of this class is to develop code for a company and fulfill their wishes, the team was also able to gain valuable experience that can be taken into their careers after graduation. Many were able to learn to react and react native for the first time since it is not covered in our classes. Our build and deploy person was able to learn how to use sandbox and digital ocean. Group members were able to learn a lot about authentication and the trickiness of back end coding. Some people became very efficient at doing both front end and back end for websites. In addition team leads were able to learn skills like how to communicate with liaisons and basic skills like how to take meeting minutes.

### **4.2 Future Development**

Multimedia Uploads - Multimedia front end still needs to be implemented. Using the provided back end code and tiny mce functions next semesters students should be

able to build front end and complete mm upload.

Mobile Development - Mobile app still needs to catch up to the website specifically with the nsfw tag and blocking function.

Content Moderation - Currently moderation is done by moderators one by one. Future developers should look into training a machine to auto ban hate or spam (needs to be talked over with liaisons).

New Tags - Although nsfw function is deployed the next steps can be adding other tags. Liaisons mentioned at the beginning of this endeavor that they would like to expand past just nsfw making it easy to curate users' feeds.

Augmented Reality - The class before us had ideas for adding augmented reality features which this year's students did not get to at all.

## 5. References

SRS: [click here](#)

SDD: [click here](#)