

Design Document

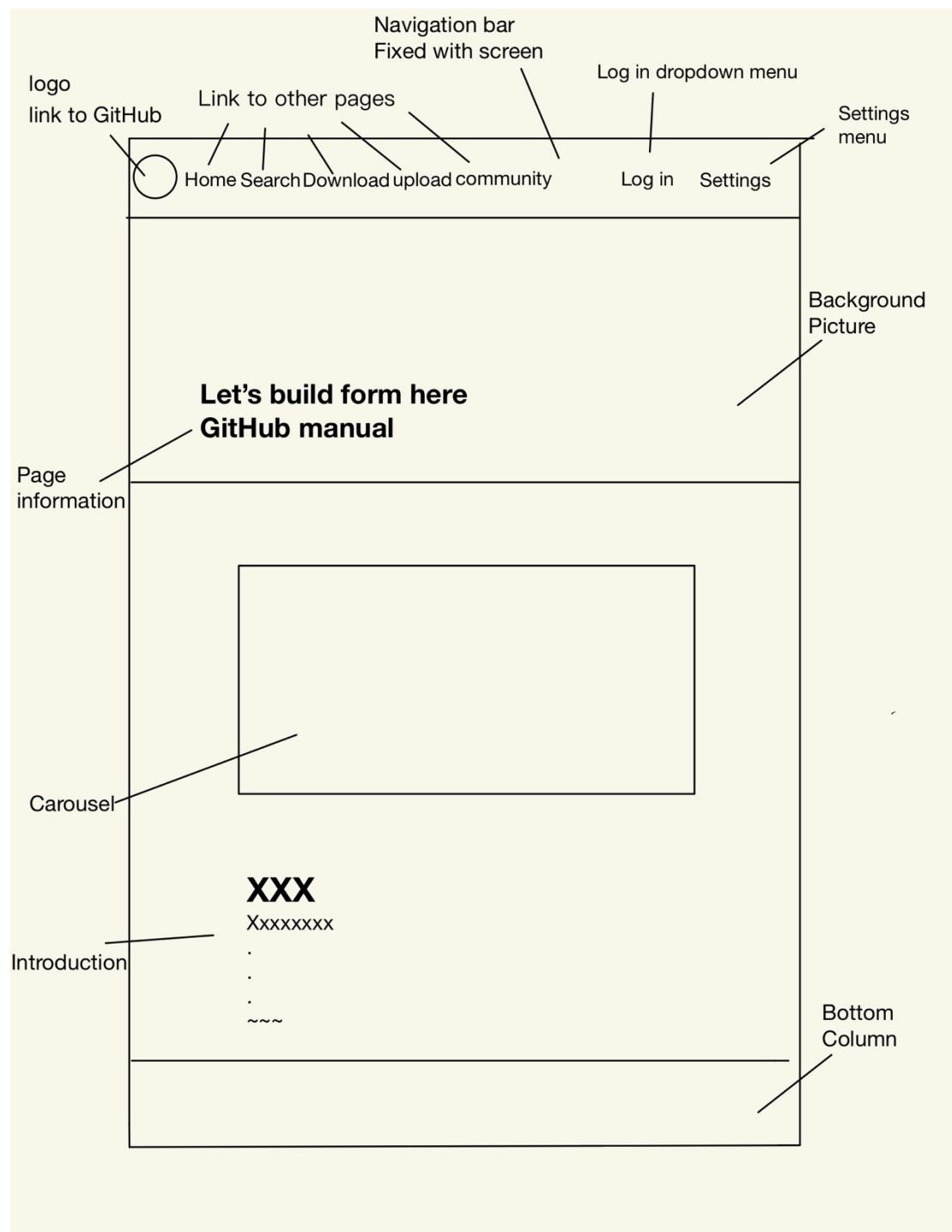
Author: Zhou Yuankun
Data:2023.12.23

Content

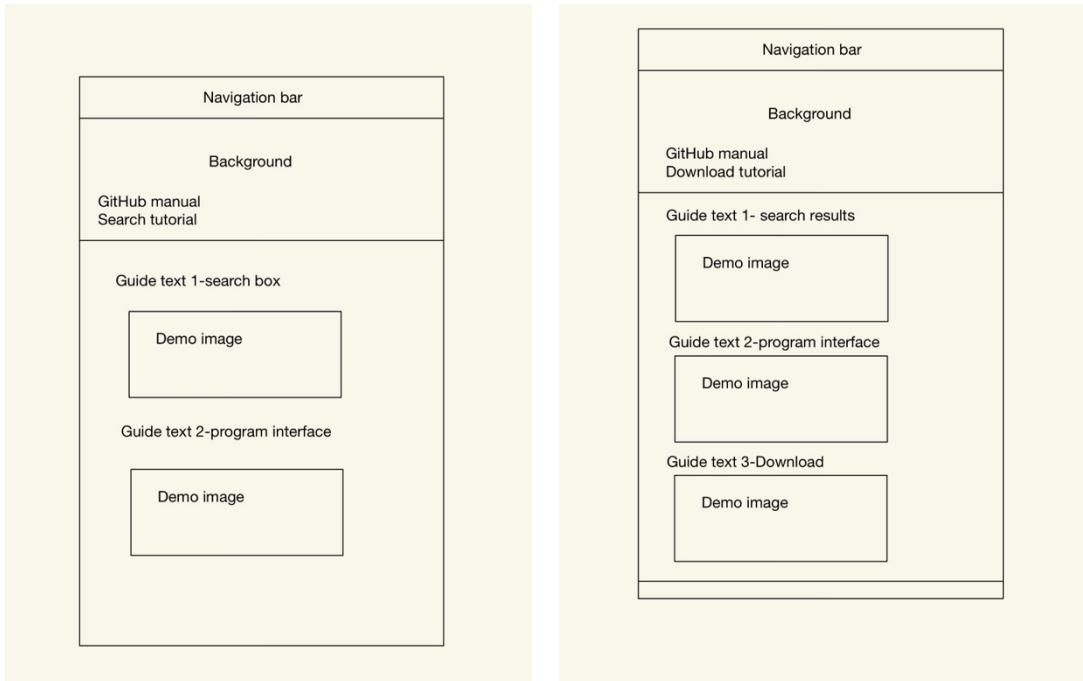
1 WIREFRAME MODEL OF PAGE LAYOUT.....	4
1.1 HOME PAGE.....	4
1.2 SUBPAGE.....	5
2 DESIGN.....	6
2.1 ADDITIONAL FEATURE AND FUNCTION.....	6
2.1.1 <i>Settings system</i>	6
2.1.1.1 'Settings' drop-down menu (Javascript, Bootstrip and Jquery).....	6
2.1.1.2 Language select (Javascript and Jquery).....	7
2.1.1.3 Outlook Select (Javascript and Jquery)	7
2.1.1.4 Color Blind Mode (Javascript and Jquery).....	8
2.1.1.5 Font Size	9
2.1.2 <i>Log in System (Javascript, Bootstrip and Jquery)</i>	9
2.1.2.1 Log in drop-down menu(Javascript, Bootstrip and Jquery).....	9
2.1.2.2 Log in (Javascript and Jquery).....	10
2.1.2.3 Registration (Javascript and Jquery).....	10
2.1.2.4 User management (Javascript and Jquery).....	11
2.1.2.5 Change password(Javascript and Jquery).....	11
2.1.3. <i>Advanced features of HTML5 – Geolocation(Javascript)</i>	12
2.1.4 <i>Advanced features of HTML5 – Web Storage(Javascript)</i>	15
2.1.4.1 Web Storage(Javascript).....	15
2.1.4.2 Web Storage in setting system(Javascript)	15
2.1.4.3 Web Storage in log in system(Javascript).....	16
2.1.4.4 Web Storage in Geolocation system(Javascript)	17
2.2 WEB STRUCTURE IMPROVEMENT AND OPTIMIZATION- RESPONSIVE DESIGN	17
2.2.1 <i>Navigation bar structure optimization(Bootstrap and Javascript)</i>	17
2.2.2 <i>Web page main structure optimization(Bootstrap and Javascript)</i>	18
2.2.3 <i>Optimization of the rotograph</i>	18
3 EVALUATION	19
3.1 EVALUTION FOR NEW FEATURE	19
3.2 WEB TESTING	20
3.2.1 <i>Multi-platform testing -- Windows and MacOS</i>	20
3.3.2 <i>Multi-browser testing</i>	20
3.2.3 <i>Cross-Device, Multi-Screen Size Testing</i>	21
3.2.4 <i>User test</i>	22
3.3 FURTHER IMPROVEMENT	23
3.3.1 <i>Server, cloud storage system</i>	23
3.3.2 <i>Enhanced Precision in Geolocation Recognition</i>	23
3.3.3 <i>Settings System with Expanded Customization Options</i>	23
3.3.4 <i>Enhanced Aesthetic Appeal in UI Design</i>	24
4. REFERENCES	24

1 Wireframe model of page layout.

1.1 Home Page

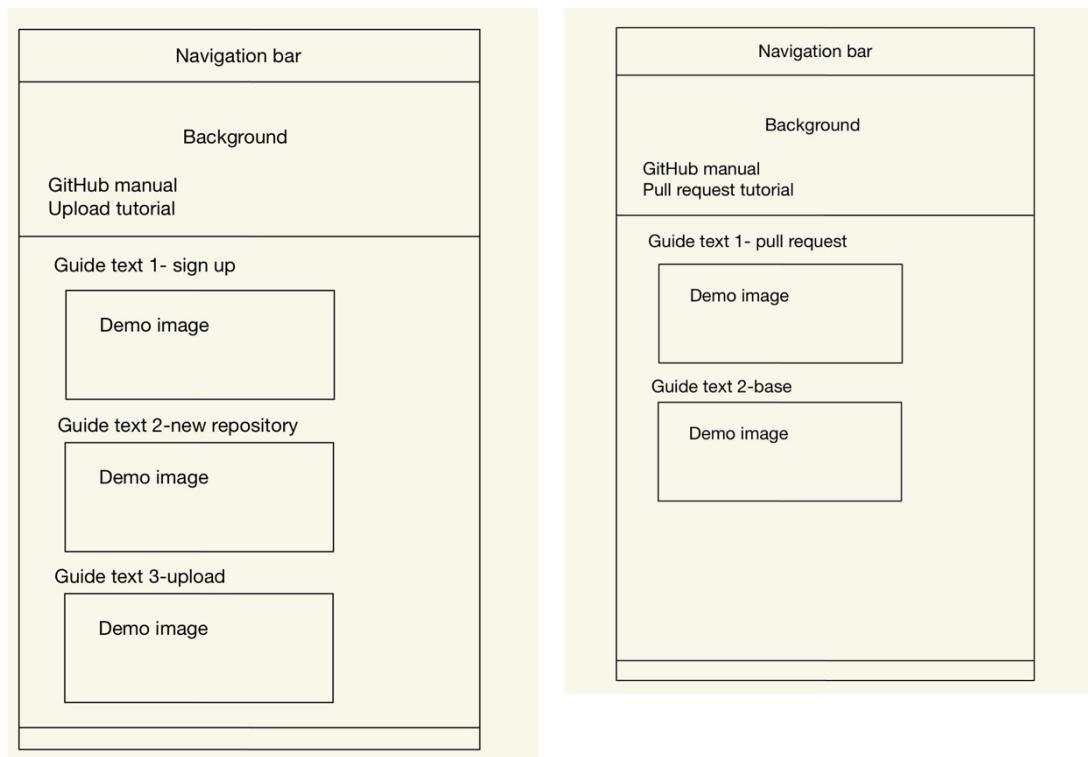


1.2 subpage



'Search' Page

'Download' Page



'Upload' Page

'Community' Page

2 Design

2.1 Additional feature and function

2.1.1 Settings system

2.1.1.1 'Settings' drop-down menu (Javascript, Bootstrap and Jquery)

The original language option was changed to the "Settings" drop-down menu, and the language selection function was integrated into the Settings

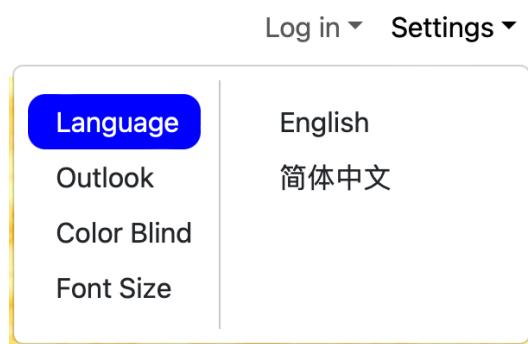


(Figure.1) Language selection box before improvement

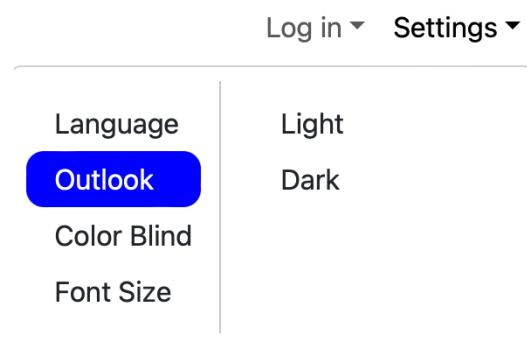


(Figure.2) Improved 'Settings' drop-down menu

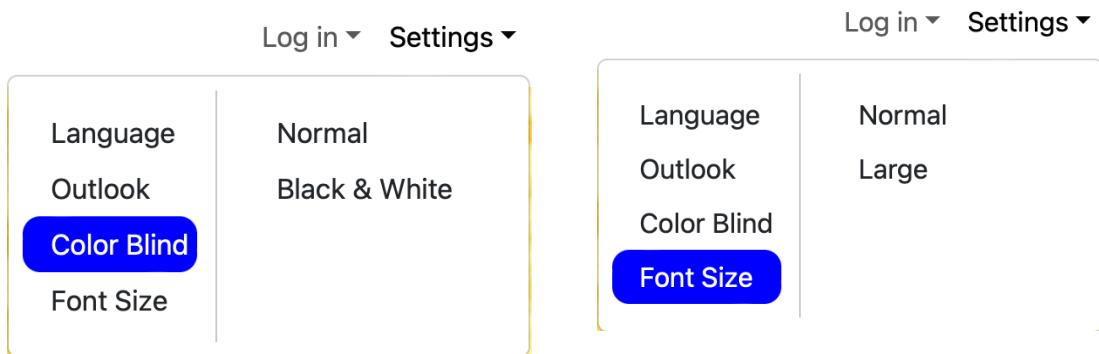
After opening the "Settings" drop-down menu, it is the option interface, you can set the web style, the original language option is in it, after selecting a left item, the right side will appear the corresponding option.



(Figure.3) Language Select



(Figure.4) Outlook Select



(Figure.5) Color Blind Mode

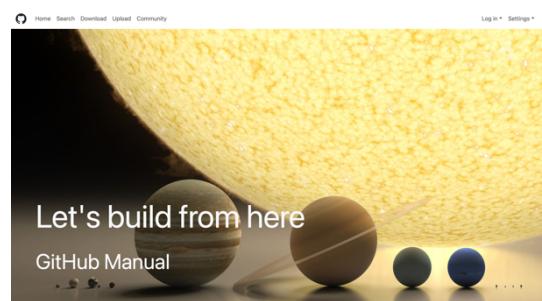
(Figure.6) Font Size

2.1.1.2 Language select (Javascript and Jquery)

After selecting your preferred language, the entire website will seamlessly transition to that language. Thanks to web storage feature (detailed further below), the site conveniently remembers your choice and applies it across all pages as you navigate, ensuring a personalized and consistent browsing experience.



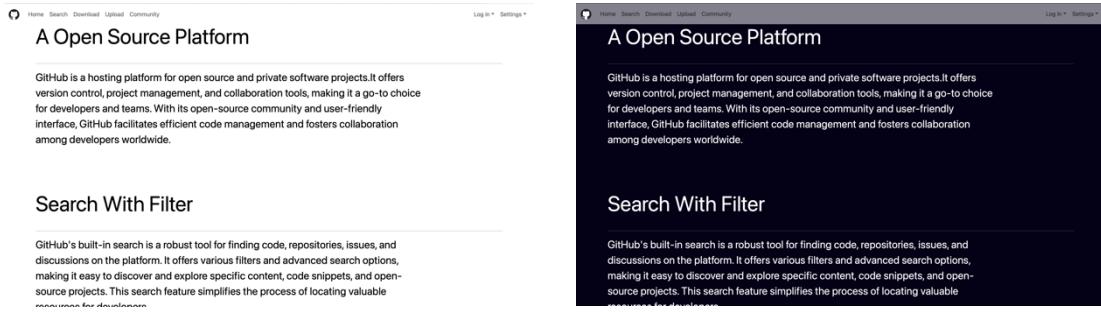
(Figure.7) Chinese



(Figure.8) English

2.1.1.3 Outlook Select (Javascript and Jquery)

Choose from two aesthetic styles for website: Light and Dark Mode. Dark Mode features a deep, rich background with bright white text, perfect for nighttime browsing. Leveraging web storage capabilities (which we'll elaborate on later), the site remembers and applies your preference across different pages and even upon your return visits.

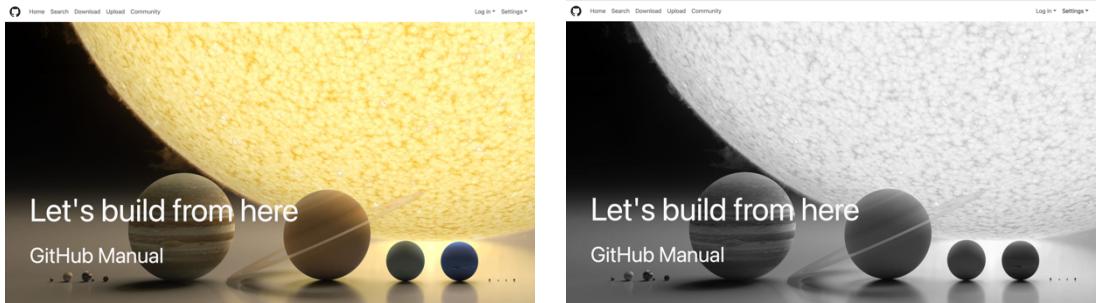


(Figure.9) Light Mode

(Figure.10) Dark Mode

2.1.1.4 Color Blind Mode (Javascript and Jquery)

Colorblind Mode is thoughtfully designed for individuals with visual impairments. Upon selecting the Black and White mode, all colored elements on the webpage transform into grayscale. Similarly, the website will remember your selection, ensuring an accessible and tailored browsing experience for every visit.



(Figure.11) Normal

(Figure.12) Black & White Mode

2.1.1.5 Font Size

Font Size feature allows you to customize the text size to suit your preference. Once you make a selection, the size of the text in detailed descriptions and other content will adjust accordingly. Similarly, the website remembers your choice, ensuring a comfortable and personalized reading experience every time you visit.

A Open Source Platform

GitHub is a hosting platform for open source and private software projects. It offers version control, project management, and collaboration tools, making it a go-to choice for developers and teams. With its open-source community and user-friendly interface, GitHub facilitates efficient code management and fosters collaboration among developers worldwide.

(Figure.13) Normal Font

A Open Source Platform

GitHub is a hosting platform for open source and private software projects. It offers version control, project management, and collaboration tools, making it a go-to choice for developers and teams. With its open-source community and user-friendly interface, GitHub facilitates efficient code management and fosters collaboration among developers worldwide.

(Figure.14) Large Font

2.1.2 Log in System (Javascript, Bootstrip and Jquery)

2.1.2.1 Log in drop-down menu(Javascript, Bootstrip and Jquery)

The login dropdown menu is conveniently located to the left of the settings, built upon the robust Bootstrap framework. This comprehensive login system offers a suite of pages including Login, Registration, Password Change post-login, and Logout, all designed for seamless user interaction and security.



(Figure.15) Log in drop-down

2.1.2.2 Log in (Javascript and Jquery)

The login interface includes a user-friendly form for entering usernames and passwords, along with an option to register. The form is equipped with intelligent detection capabilities, offering prompts for any discrepancies, such as a required field being empty or, crucially, an incorrect password. For those not yet registered, a simple click on 'New User' leads to the registration process. Benefiting from web storage technology, users need to log in just once. This convenience extends across different pages and even when refreshing the page, eliminating the need for repeated logins(Fig.16).

The image displays two wireframe diagrams side-by-side. On the left, labeled '(Figure.16) Log in', is a login form. It features a 'Log in ▾' button at the top, followed by 'Username' and 'password' fields, each with a placeholder 'username' or 'password'. Below these is a blue 'Log in' button. At the bottom is a 'New user' link. On the right, labeled '(Figure.17) Registration', is a registration form. It has a 'Log in ▾' button at the top. Below it is a 'Create a username' section with a 'username' field. Further down are 'Enter Password' and 'Confirm password' sections, each with a 'password' field. A blue 'Confirm creation' button is at the bottom. A 'Back' link is located at the very bottom.

(Figure.16) Log in

(Figure.17) Registration

2.1.2.3 Registration (Javascript and Jquery)

In the registration interface, users have the opportunity to create a new account, which includes setting up a username, entering a password, and confirming the password. The page provides immediate feedback for issues like an already in-use username or mismatched password entries. Once all steps are completed, a simple click on 'Confirm' finalizes the account creation. Due to technical limitations, all account information is stored in web storage, which means account details are not transferable across devices or browsers(Fig.17).

2.1.2.4 User management (Javascript and Jquery)

Once logged in, the login dropdown menu transforms into an account information hub(Fig.18). Clicking on this allows users to manage their account, including options to change their password and log out. Logging out reverts the interface to its pre-login state, identical to when users first arrive on the site, allowing them the option to log in again as needed.

The image consists of two wireframe diagrams. The left wireframe, titled 'Welcome, 002 ▾', shows a dropdown menu with three options: 'Username: 002', 'Change password', and 'Log out'. The right wireframe, titled 'Welcome, 002 ▾', shows a 'Change password' form. It includes fields for 'Enter old password' (with a placeholder 'password'), 'Enter new password' (with a placeholder 'password'), 'Confirm password' (with a placeholder 'password'), and a blue 'Comfirm' button. A 'Back' button is also present at the bottom.

Welcome, 002 ▾

Welcome, 002 ▾

Username: 002

Change password

Log out

Enter old password
password

Enter new password
password

Comfirm password
password

Comfirm

Back

Figure.18 User management

Figure.19 Change password

2.1.2.5 Change password(Javascript and Jquery)

The password change interface facilitates users in updating their account password(Fig.19). Initially, it requires entering the current password to verify identity. Following this, users can input a new password. Upon confirmation, this new password replaces the old one, enabling users to log in with their updated credentials.

2.1.3. Advanced features of HTML5 – Geolocation(Javascript)

The website employs a geolocation feature. Upon visiting the site, it prompts a request for geolocation access (Fig.20) (demonstrated using Safari, though the popup style may vary with different browsers). If you agree, the site accesses your geographical location and automatically determines if you are in China(Fig.21). Should it recognize your location as China, the language will switch to Chinese(Fig.22)(Fig.23); otherwise, it remains in the default English. This language adjustment is part of the same system mentioned earlier, meaning the language set based on geolocation will also be remembered and applied automatically as you navigate to other pages. Additionally, if you prefer not to use the automatically detected language, you can change it again in the settings. This preference will also be updated and remembered.

Thanks to web storage, this geolocation-triggered language switch activates only on your first visit to the site. Once the location is identified, the geolocation prompt will not reappear when you refresh the page or visit other sections of the site. Due to technical limitations, precise geolocation based on latitude and longitude requires collaboration and permission from third party service. Therefore, the site's detection is a general range estimation, yet it still satisfies the majority of localization needs.

It's important to note that due to configuration differences among various browsers, some may not be able to acquire location data even with granted geolocation permissions. This issue is particularly evident in browsers like Chrome and Opera. However, in most other browsers, such as Safari and Edge, the geolocation feature operates normally and effectively. This discrepancy highlights the necessity of considering browser compatibility in web design to ensure a broad and consistent user experience.

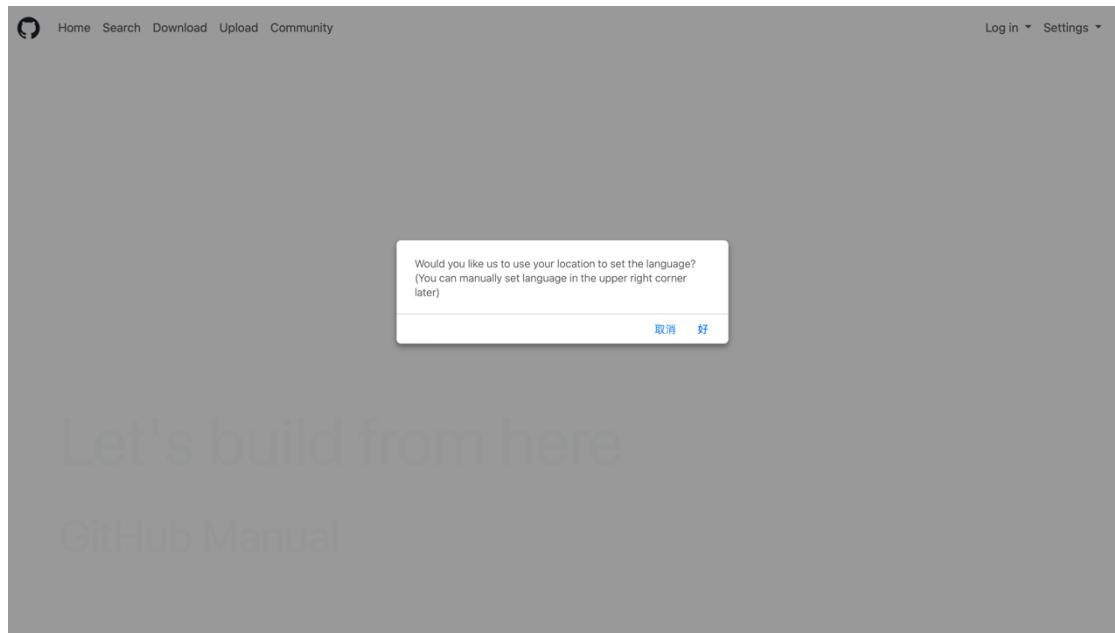


Figure.20 Ask for Geolocation

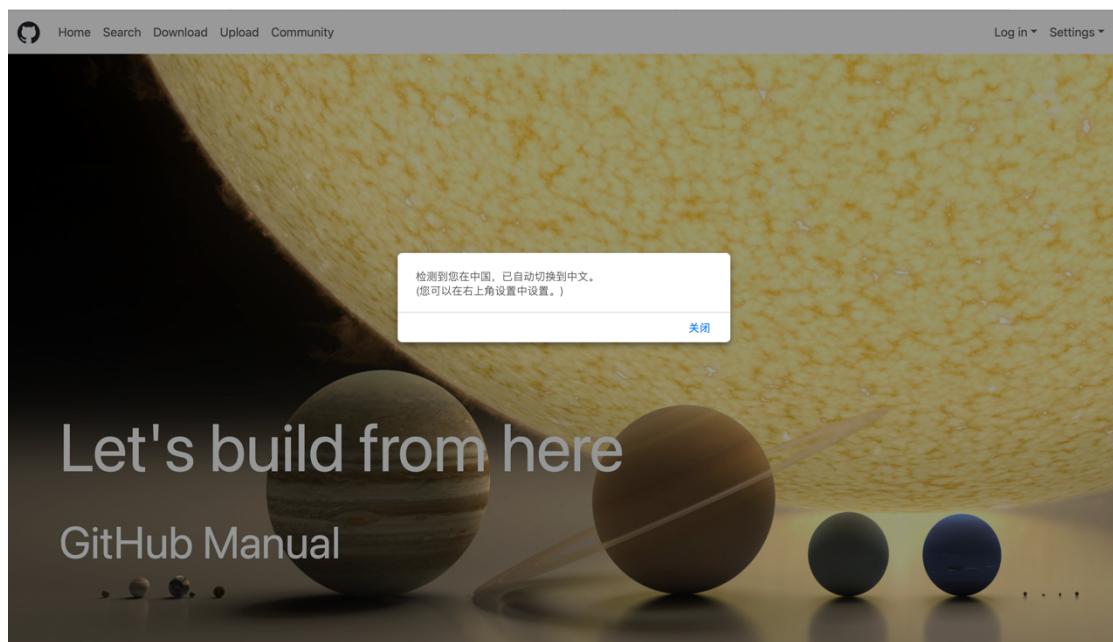


Figure.21 Browser request

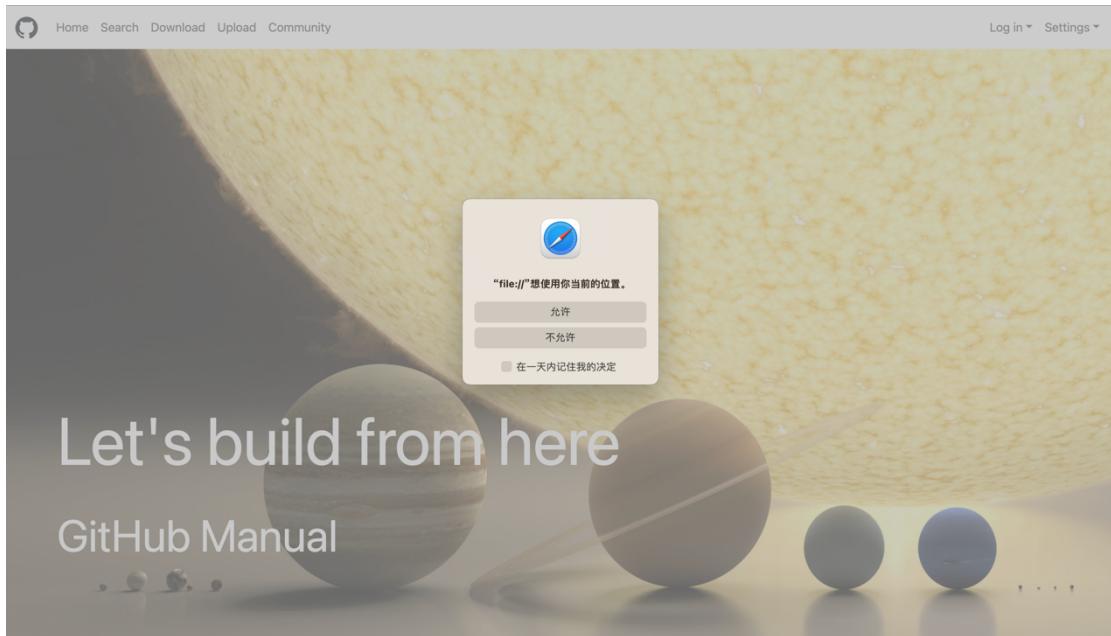


Figure.22 Determine the location and switch languages

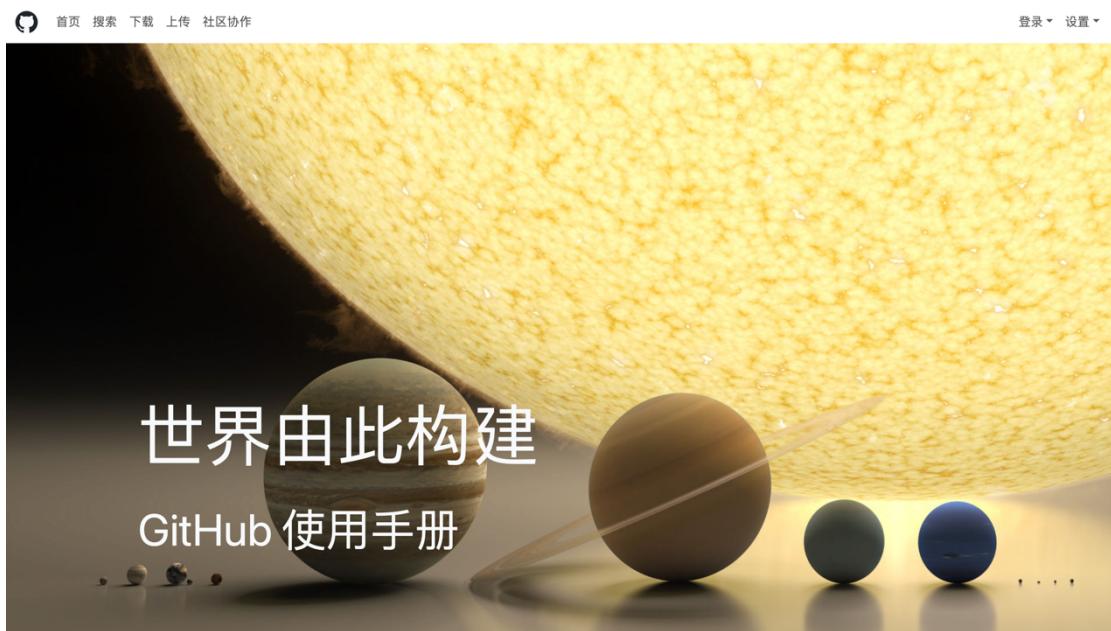


Figure.23 Complete identification switch

2.1.4 Advanced features of HTML5 – Web Storage(Javascript)

2.1.4.1 Web Storage(Javascript)

The website utilizes web storage technologies, specifically localStorage and sessionStorage, which are integral to the functionality of various features. These include the settings system, login mechanism, and the geolocation-based language switching, as previously described. This sophisticated use of web storage enhances the user experience by ensuring seamless, efficient, and personalized interactions across the site.

2.1.4.2 Web Storage in setting system(Javascript)

The settings system on website leverages web storage to ensure that all your locally made adjustments are saved. Whether refresh the page, navigate to a different section, or even exit the site, the preferences are preserved. Upon return, the website automatically loads with the settings that previously configured, providing a seamless and personalized user experience.

2.1.4.3 Web Storage in log in system(Javascript)

The login system on website is empowered by web storage. Whether on the login, account creation, or password change pages, the information you input is stored within the webpage. This data undergoes client-side feedback through comparison with the database, applying numerous functions such as data retrieval, comparison, and modification. For instance, on the account creation page, duplicate usernames are not permissible. On the login page, access is granted only with the correct password. Similarly, any password updates on the change password page are synchronized with the database.

On the other hand, once logged in, the website saves your preferences set with that account. When you log in again with the same account, the website automatically loads your previously set preferences(Fig.24)(Fig.25). Therefore, we highly recommend registering an account and setting your style preferences for a more personalized and streamlined browsing experience.

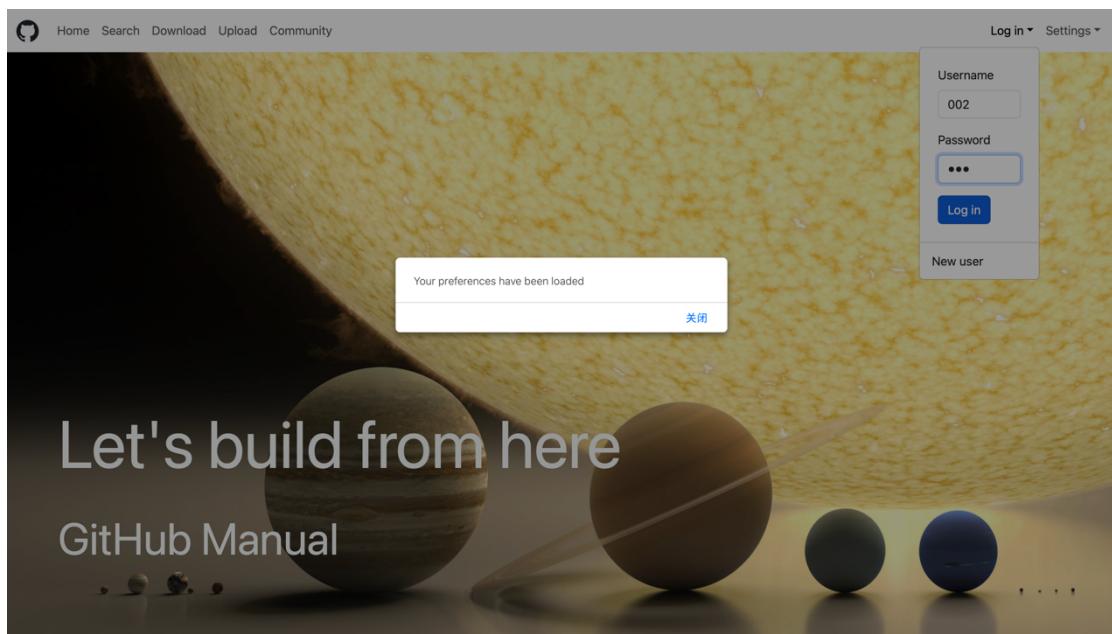


Figure.24 Load setting preferences

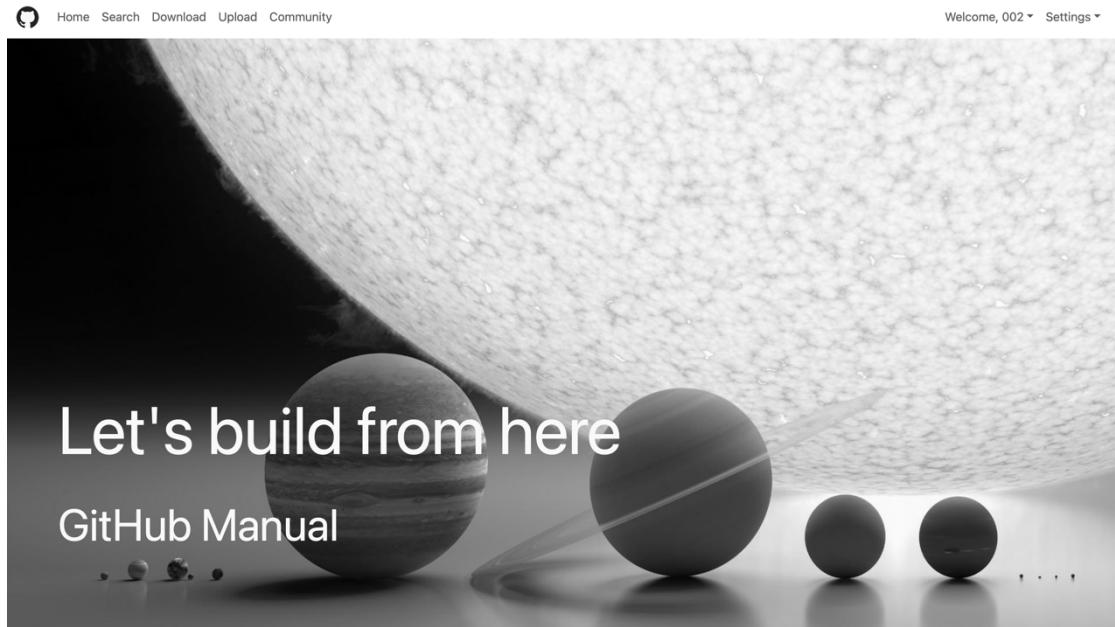


Figure.25 Automatically sync preferences

2.1.4.4 Web Storage in Geolocation system(Javascript)

The geolocation system on the website also utilizes web storage functionality. This ensures that the site performs geolocation only on your initial visit. During subsequent browsing sessions, the request for geolocation will not reappear, streamlining your experience and respecting your initial preference.

2.2 Web structure improvement and optimization- responsive design

2.2.1 Navigation bar structure optimization(Bootstrap and Javascript)

In the latest update of their website, significant enhancements have been made to the navigation bar. Previously constrained by language limitations, it was limited to basic CSS styles and simple dropdown menus, offering only basic functionality.

Now, the structure of the navigation bar has been thoroughly optimized. The right-hand side has evolved from being a simple language selector to an integrated system encompassing both settings and login functionalities. This

advancement represents a significant leap in both aesthetics and utility.

In the previous iteration of the website, hover menus were implemented on the navigation links. While innovative, this feature did not deliver an optimal user experience, often leading to unintentional activations and user frustration. Acknowledging this, the designers have removed the complex hover dropdown effects in the new design, refocusing on the primary function of the links – seamless navigation to other pages.

Completing the upgrade, the entire navigation bar now employs Bootstrap's responsive design. This ensures full compatibility across various devices, maintaining functionality and enhancing the overall user experience.

2.2.2 Web page main structure optimization(Bootstrap and Javascript)

Compared to the previous generation of their website, where each segment of text and individual characters were positioned separately, the latest version embraces Bootstrap's responsive design. By adopting a grid layout, text and images are neatly organized into rows and columns, allowing for responsive adjustments to different devices. This approach not only enhances compatibility but also reduces the amount of code required, resulting in a more streamlined website. The reduced code complexity also significantly improves code readability, making the site both technically elegant and user-friendly.

2.2.3 Optimization of the rotograph

Due to language constraints in their previous website iteration, the carousel was designed using a singular CSS approach, involving extensive coding to achieve a basic effect. In this latest update, the carousel leverages Bootstrap templates and accompanying JavaScript files. This efficient implementation significantly streamlines the code, enhancing both the readability and the overall simplicity of the website. This advancement not only simplifies the backend development but also results in a more fluid and visually appealing user experience.

3 Evaluation

3.1 Evaluation for new feature

In the design blueprint for their previous website, there was a vision to introduce more style options in the next generation, including appearance, font choices, and consideration for accessibility for people with disabilities. In this latest website design, the settings have been integrated to include language selection, web appearance, colorblind mode, and font size options. This expansion in features broadens the website's audience, making it accessible to a more diverse range of users.

On another note, the addition of a login system allows users to save their setting preferences. Once a user has logged in and customized their website style, there's no need for repeat configurations on subsequent visits. Simply logging in will automatically sync their preferences, greatly enhancing user convenience and experience.

This iteration of the website has also introduced geolocation recognition, interacting with the language selection feature. On the user's first visit, the site identifies their location and sets the language accordingly. This feature is especially beneficial for users who might be deterred by an unfamiliar language upon their initial visit. Geolocation-based language setting makes the website more user-friendly from the outset, preventing potential users from leaving due to language barriers.

Web storage acts as a bridge linking various features - from remembering setting preferences and the login system to geolocation recognition and settings synchronization. It plays a crucial role in storing different user information on the website. However, due to the nature of web storage, the saved information is only available on the browser and cannot be shared across multiple devices or browsers.

In terms of layout, the website now uses Bootstrap's responsive design, significantly improving device adaptability compared to the previous generation. Whether it's varying screen sizes or orientation, the new website operates smoothly. Additionally, the use of the Bootstrap library has greatly optimized the site's code, enhancing readability.

The new website extensively uses JavaScript and jQuery to implement more complex functionalities. Features such as the settings and login systems are

powered by JavaScript and jQuery, enriching the website's capabilities. Many effects previously achieved with CSS have been rewritten using JavaScript and jQuery, not only enhancing their effectiveness but also making the code more concise and readable.

3.2 Web testing

3.2.1 Multi-platform testing -- Windows and Mac OS

This time, the website has been rigorously tested across various operating systems to ensure flawless functionality. As illustrated, both systems in the image use the Chrome browser. On each system, every feature of the website has been meticulously tested, with all functions operating as expected. This thorough testing underscores our commitment to providing a seamless and consistent user experience, regardless of the operating system.

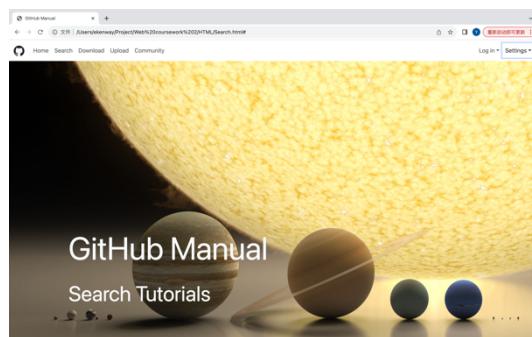


Figure.27 Windows(Chrome)



Figure.26 Mac OS(Chrome)

3.3.2 Multi-browser testing

The website has been extensively tested across a variety of browsers, including but not limited to Safari (Mac OS), Firefox (Mac OS), Chrome, Google, Edge (Windows), and Opera (Windows). In all these browsers, the site not only opens smoothly but also all of its features function perfectly. This level of testing ensures that regardless of the browser choice, users can expect a consistent and reliable experience when interacting with the website.

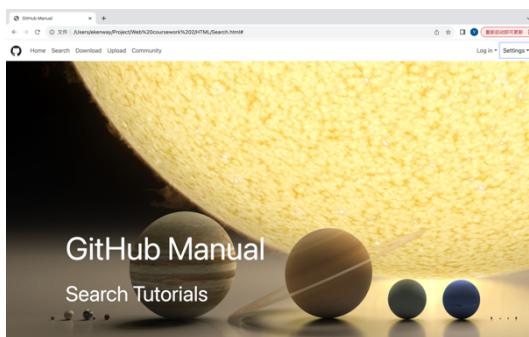


Figure.28 Chrome

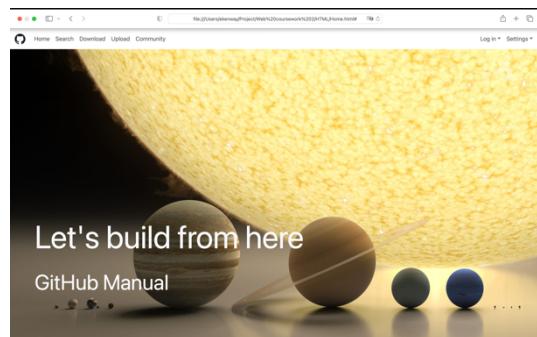


Figure.29 Safari

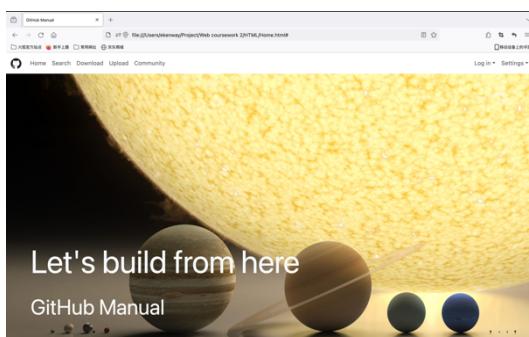


Figure.30 Firefox



Figure.31 Edge



Figure.31 Opera

3.2.3 Cross-Device, Multi-Screen Size Testing

The website has undergone simulated testing on screens of varying sizes and across different devices. This includes comprehensive testing in both landscape and portrait orientations on mobile devices. The results confirmed that the website's structure remains intact and all functionalities are perfectly executed in every scenario. This meticulous testing ensures a robust and adaptable user experience, regardless of device or screen orientation.

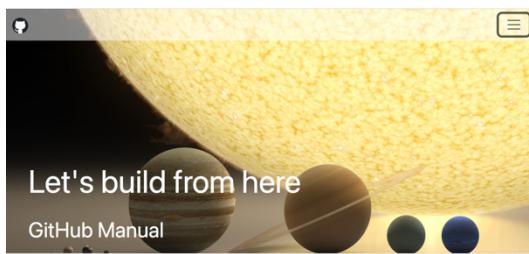
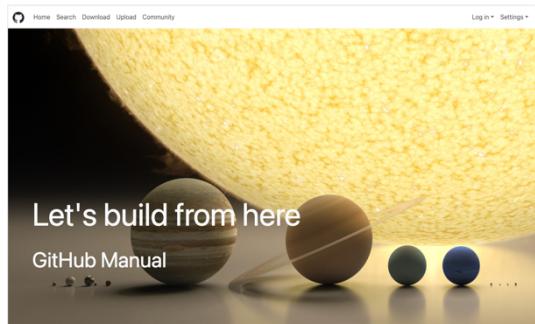
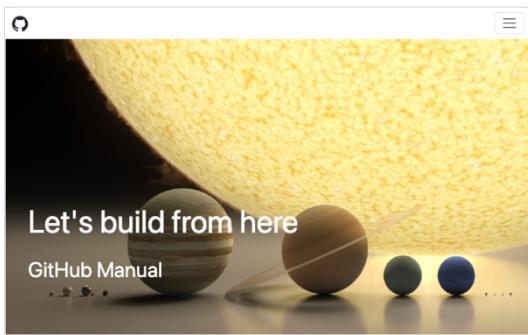


Figure.32 iPhone14ProMax landscape

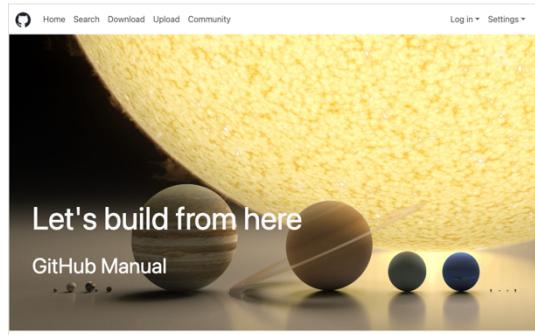


What is GitHub

Figure.33 iPad Pro landscape



What is GitHub



What is GitHub

Figure.35 iPad Pro Vertical



A Open Source Platform

GitHub is a hosting platform for open source and private software projects. It offers version control, project management, and collaboration tools, making it a go-to choice for developers and teams. With its open-source community and user-friendly interface, GitHub facilitates efficient code management and fosters collaboration among developers worldwide.

Figure.34 iPhone 14ProMax Vertical

3.2.4 User test

After completing the aforementioned internal tests, the website was further subjected to real-world user testing. Several users were invited to engage with the site and provide feedback, aiming to gain insights into user experience and needs, as well as to uncover any potential bugs that might have gone unnoticed. The feedback from these users unanimously reported no bugs, but they suggested that the design of the settings and login pages could be optimized to enhance the site's aesthetic appeal.

3.3 Further improvement

3.3.1 **Server, cloud storage system**

As mentioned earlier, due to the nature of web storage, the data stored by the website is confined to the browser. This limitation means that user data and preference settings are restricted to the browser and cannot be shared across devices, hindering the realization of a true account registration system that remembers user preferences. In future designs, there is a vision to launch the website on a server and save user data on the server itself. This advancement will enable the implementation of a genuine user registration system that can truly save and recall user settings preferences, enhancing the overall user experience and convenience.

3.3.2 Enhanced Precision in Geolocation Recognition

As previously mentioned, the current geolocation feature of the website identifies a user's location based solely on latitude and longitude. However, utilizing these coordinates for precise location determination requires collaboration with third-party operators. At present, the website employs a general range to approximate the user's region. Looking ahead, there is an aspiration for the website to connect to a third-party database to obtain more accurate geolocation data. This enhancement will enable the website to automatically set a wider range of languages based on the user's precise geographical location, further personalizing and improving the user experience.

3.3.3 Settings System with Expanded Customization Options

The settings system in the new generation of our website has seen significant enhancements compared to the previous version. However, when compared to comprehensive settings systems like those on smartphones or computers, the range of options available is still limited. Additionally, the language options are currently restricted to only Chinese and English, which is considerably insufficient in terms of variety. In future designs, there is an aspiration to further enrich the range of settings options. The goal is to incorporate more languages to better accommodate users from various countries. This expansion will not only facilitate a more inclusive user experience but will also complement the geolocation recognition feature by offering a broader array of

language choices.

3.3.4 Enhanced Aesthetic Appeal in UI Design

In previous user feedback, it was noted that users suggested further optimization of the web pages, particularly the design of the settings and login dropdown menus. The current website utilizes the Bootstrap library. For future designs, there is a vision to build upon this Bootstrap foundation by incorporating more diverse and innovative designs, enhancing the visual appeal of the interface and elevating the overall user experience.

4. References

Github. [Online]. [Accessed in 10 October 2023]. Available from:
www.github.com