Part 1: Website Overview

The purpose of the site is to act as a web portfolio for hosting my projects and experiences. The portfolio distinguishes between architecture, human-computer interaction (HCI), and research projects, and displays attributes and media related to the projects. The site was built with growth and future projects in mind, and the code structure works to easily incorporate new projects with minimal change to the code. To make the site interactive, I implemented several sorting methods to display the projects. Projects have several attributes including type, location, and date. Each of these is implemented as a sorting method by categorizing projects by type, visualizing project locations on a globe, and sorting the projects on a timeline. The globe is an interactive 3D component built from an external library. Additionally, an external library was used to create a timeline that is navigable with scroll features. Through an interactive button set, the users can choose to display the projects by their choice of sort method. The categories, globe, and timeline all provide visually engaging methods for interacting with the projects and provide an opportunity for users to explore and differentiate projects. When a user selects a project, they are taken to a project detail page where a description, attributes, and gallery of project images are displayed for them to view. The target audience are hiring managers, human resources professionals, recruiters, and those working in architecture and HCI spaces. The portfolio acts as a resource that can be provided to these users to aid in the hiring process for the architecture and HCI fields.

Part 2: User Interaction

- **Responsive Site**
    - **Interaction**: When the user resizes their browser window, the page will adjust. Project gallery images will become smaller yet maintain their aspect ratios. Text will appropriately wrap, the “sticky” navigation bar will not cover excess webpage, and the anchor link navigation will take the user to the correct location without overlap of items.
    - **Reproduce**: To reproduce this behavior, navigate the website at the following screen sizes: (Typical Laptop: 1920x1080px) (Iphone 14 Pro Max: 430x932px). Click “My Work” in the navigation bar and observe the section appear at the top of the page, without overlap with the navigation bar. In the “My Work” section with the default “By Type” sort type, toggle between screen sizes and observe

the images resize, yet maintain their aspect ratio of 1:1 and grid format. Click the “By Location” sort type, toggle between screen sizes and observe the globe maintain a central position and appropriate scaling. Click the “By Date” sort type, toggle between screen sizes and observe the timeline scale appropriately as well.

- **Accessible Site**
    - **Interaction**: When the user navigates the page using “Tab” actions, they will be able to access links. All images have appropriate alt text. See Appendix A for WAVE evaluation results.
    - **Reproduce**: Use the keyboard “Tab" key on the web page and observe the links highlighting. Repeat this action until an “Architecture” project in the “My Work” section is highlighted. Click “Tab” + “Enter” keys to access the project. On this page right click an image, click “Inspect”, and observe the unique and descriptive alt-text.
- **Sticky Navigation Bar**
    - **Interaction**: The navigation bar is at the top of the page upon page load, and as the user scrolls down the page, it remains in the topmost position and links to other pages.
    - **Reproduce**: Observe the position of the navigation bar on page load, next scroll the page and note that the position remains. Link behavior is tested below. Hover the cursor over each navigation link, except the page title, and observe the bolding and underlining to provide a visual cue that the user can select the item. Scroll to the bottom of the page. Click the “PORTFOLIO” title to return to the top of the page. Click on the “My Work” or “Contact” text in the navigation bar. The webpage will jump to the respective section. Click on the “Resume” text in the navigation bar. A PDF resume will open in a new tab.
- **“About Me” Section Button**
    - **Interaction**: The user can read a welcome text and is provided with an additional link to quickly access contact links.
    - **Reproduce**: Click the button with the “Contact Me” text. The site will jump to the bottom of the “Contact” section.
- **“My Work” Section Sort Buttons**
    - **Interaction**: Three buttons are presented to the user in the “My Work” section with the text: “By Type,” “By Location,” and “By Date.” By default the “By Type”

button is selected and project icons are displayed in a grid format with subheadings of each project type: HCI, architecture, and research. Selecting any of the buttons will style the button to be seen as pressed, and the format for displaying projects will change. These different methods are described separately below.

    - **Reproduce**: Scroll to the “My Work” section. Observe that the projects are displayed in a grid with subheadings for each type based on the default “By Type” button selection. Click each of the other two buttons: “By Location” and “By Date.” Observe that the project gallery changes form to a globe and timeline, respectively.

- **“By Type” Sort Button and Project Display**
    - **Interaction**: When the user clicks the “By Type” button the projects will appear in a gallery grid format with four columns of images. Images are sorted into three grids each with a heading detailing the project category/type. Hovering the cursor over a project icon will enlarge the image and reveal the project title. Clicking a project icon will take the user to a project detail page populated with information about the selected project. For the projects in the “Research” gallery, the icons will link to the external publishers hosting sites for the research papers and these pages will be opened in a new tab.
    - **Reproduce**: Observe that the image gallery is split into three project category types. Hover over projects. Observe the hover effect and project title. Click a “Research” project. Observe that the article opens in a new tab. Return to the main page. Click an “Architecture” project. Observe that the project detail page is now open in a new tab.
- **“By Location” Sort Button and Project Display**
    - **Interaction**: When the user clicks the “By Location” button a globe appears with markers noting the location of projects. The user can navigate the globe by clicking on the globe and dragging their cursor. Using the mouse scroll wheel or dragging with two fingers on a laptop touchpad, the user can zoom into the map. The opposite zooming motion on a mouse or touchpad zooms out of the globe. When the user hovers over a location marker, the project name and location appear over a project icon. Clicking the icon will take the user to a project detail page.

    - **Reproduce**: Scroll to the “My Work” section. Click the “By Location” sort button. Observe that the image gallery has changed to a globe. Drag the cursor over the map to change the view. Hover over a project marker in and observe the hover effect.
- **“By Date” Sort Button and Project Display**
    - **Interaction**: When the user clicks the “By Date” button the projects will appear in a timeline format with project icons alternating on the top and bottom of a timeline. The user can hover over a project icon to reveal the project title. The user can click a project icon to navigate to a project detail page in a new tab. To navigate the timeline, users can use the left (<) and right (>) arrow buttons on the timeline. Clicking the right arrow (>) button will reveal older projects. When the timeline loads, the newest project is displayed first. As the user reveals older projects, the left arrow (<) becomes clickable and brings newer projects back into view.
    - **Reproduce**: Scroll to the “My Work” section. Click the “By Date” sort button. Observe that the image gallery has changed to a timeline, with a 2024 project at the start of the timeline. Click the right arrow (>) to navigate the timeline to an earlier date.
- **Individual Project Detail Page Display**
    - **Interaction**: The individual project detail pages will have a “sticky” navigation bar at the top of the page just like the main page. Users will can navigate back to the main page through the navigation bar.
    - **Reproduce**: Click “My Work” to return to the project gallery “My Work” section of the main page.
- **“Contact” Section Links**
    - **Interaction**: The user can access external sites by clicking the respective icons. Clicking the mail (letter) icon will load the users default mail program and start an email to my email address. Clicking the Linkedin icon will take the user to my Linkedin account. Clicking the Github logo will take the user to my Github account. These new web pages will open in a new tab, so the portfolio webpage is still accessible to the user.
    - **Reproduce**: From the navigation bar, click the “Contact” link. Now that the “Contact” section is in view, click the email (letter) icon and observe the mail program opening. Return to the main webpage and repeat with the Linkedin and

Github icons. Verify that clicking each will open a new tab with the appropriate account opened.

Part 3: External Tools

- Tool 1: Globe.GL (https://github.com/vasturiano/globe.gl)
    - This globe visualization library was chosen because of its ability to include HTML markers at geographic coordinates, which aligns with the need to display projects at certain locations. The library had several examples, and good documentation which made it a good choice for use in the portfolio.
    - The library files are hosted on an external content delivery service and the Globe.GL library is accessed by including the link to the service in a <script> tag. Next, a globe object was created following the sample code and instructions provided by the authors. The project data structure is looped through to extract key information such as title, location string, latitude, and longitude as an array which is then passed to the globe. Next, DOM elements were defined and populated with the project information and the library uses the geographic coordinates to place those elements on the globe.
    - The globe adds an interactive and engaging project visualization method to the portfolio. The user can scroll around the globe and zoom into areas of interest. Project markers clearly indicate where projects are located and hovering over the markers provides more information to the user. This method can increase user engagement with the projects, driving them to click the project links and explore them further.

- Tool 2: Squarechip Timeline (https://github.com/squarechip/timeline)
    - This library was chosen for its ability to display HTML content on a vertical or horizontal axis, sorted by date. The timeline library fulfills the key aspect of providing context for the date when projects were completed, in comparison with others. The library had a sample, documentation, and an intuitive DOM structure that is easily configurable for project icons and links.
    - The timeline library is not hosted online and was therefore downloaded from Github and placed in the portfolio repository. Following the documentation the “dist” folder which contains the Javascript and CSS files related to the library was

used, while the additional files are placed in a named folder. To use the timeline, a strict DOM structure indicated in the documentation was followed and each timeline element is held in a element with class “timeline__content.” These elements are then created by iterating through the project data structure, and creating a link, image, a title that appears on hover, and a date which appears on the top or bottom of the item depending on where it appears in the timeline.

- This timeline provides an interactive, and responsive method for users to engage with projects. Users can scroll through the timeline using the forward and backward buttons, and can hover over the project icons to learn more about the projects. Similar to the globe library, the interactivity can help to direct users to find a project they like and click the link to learn more about it.

Part 4: Iterative Design

The project started with three wireframe prototype ideas which were presented in lab and received feedback. This feedback led to the project scope being narrowed to a portfolio website which would incorporate project sorting methods. The next prototype, done in Figma, was also presented for feedback. This feedback led to design changes such as text spacing, including the resume as an external file, and having a fixed navigation bar at the top of the screen. The coding process led to other design changes such as hover action on the project gallery icons, the navigation bar links, and the contact icons to provide the user more feedback in navigating to other locations.

Part 5: Challenges

One key challenge with the portfolio was standardizing the way projects are stored and published to the project detail pages, and to resolve this I created detailed objects containing project attributes in key value pairs. Coding for responsive behavior was challenging and required careful attention to the flex-boxes which were used, and how they interacted with each other, their content, and the page as a whole. Finally, one of the largest challenges was displaying project images in a neat and organized gallery, which was eventually achieved using a system of image attributes that allowed the media to be displayed as full width, split width, or split as thirds.

Appendix: Web Accessibility Evaluation Tool (WAVE) Output

Main Page	Detail Page

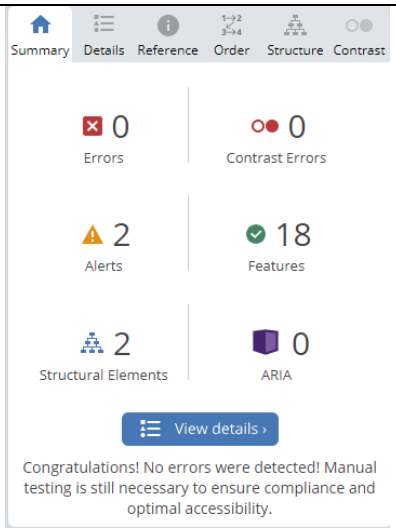

Figure 1: Main Page Summary.

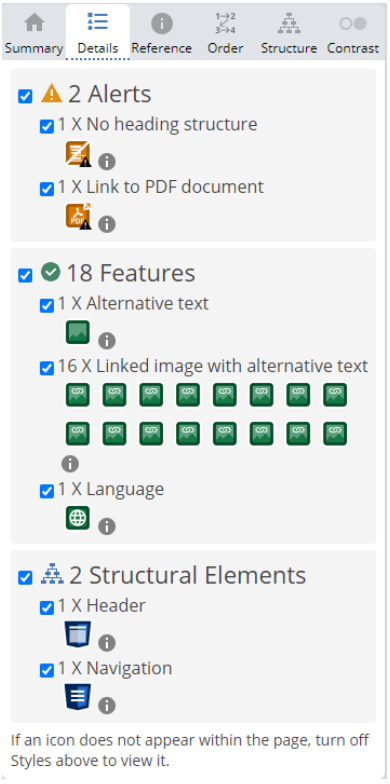

Figure 2: Main Page Details.

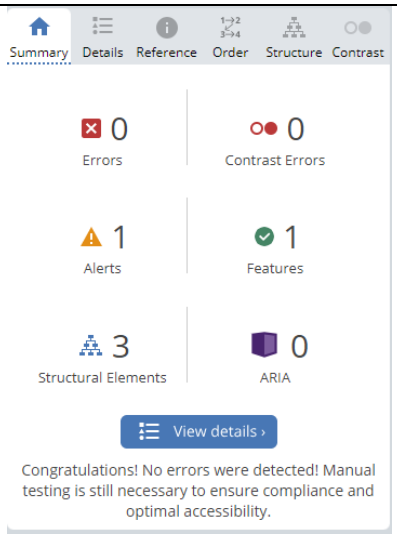

Figure 3: Project Detail Page Summary.

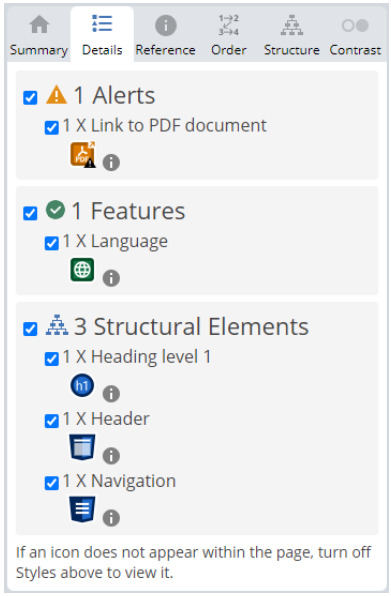

Figure 4: Project Detail Page Details.