

## UI/Frontend decisions and options

For requirement of A2, we decide to display the UI design of our website using HTML and CSS since they have a very shallow learning curve, which even our teammate with no previous software development experience could write nice pages after learning it for several days.

For future frontend development, after finalizing our topic, we explored various approaches for building a web interface to showcase the public abstracts of our applied research internship projects. The front-end developers will use React to create a dynamic and user-friendly web interface as it is adept at managing complex user interfaces and is compatible with the Javascript and Typescript languages, which most of our teammates are familiar with. Following listed more justments on why React is chosen:

**Ease of development:** React's ease of development is largely due to its component-based architecture. As shown in [this blog](#), React has a shallower learning curve compared to Angular, another popularly used frontend technology, due to its building of reusable UI components, which can be easily combined to form complex user interfaces. This modular approach to development reduces the amount of code required and speeds up the development process. The React library is also relatively easy to learn, making it accessible to both experienced and novice developers.

**Availability of libraries & Maturity of the technology:** The React ecosystem is home to a vast array of open-source libraries and tools, which can be used to simplify common development tasks such as routing, state management, and form validation, as listed in [this blog](#). Many of these libraries have been developed and maintained by the React community for several years and have reached a high degree of maturity and stability. For instance, [React Bootstrap](#) is a widely used library that builds React components from scratch, without the need on dependency to jQuery. It has been around since 2011 and is now considered a mature and stable library but keeps evolving at the same time.

**Domains:** React is also widely used in various domains, including e-commerce, social networking, media, and healthcare. Its flexibility and modularity make it suitable for building applications of different sizes and complexities. React has been adopted by many companies such as Facebook, Airbnb, and Netflix, who have built large-scale web applications using React (Olga Melnyk, 2022). This demonstrates the ability of React to handle the demands of different domains. For instance, Airbnb has a large-scale React application that handles millions of bookings per year.

**Popularity:** According to the State of JS 2021 survey, React is the most popular front-end library or framework, with a usage rate of 80%, and have the highest positive experience comparing to other technologies such as Vue or Svelte. React's popularity can be attributed to its ease of use, flexibility, and wide adoption by developers and companies. The popularity of

React has also contributed to the growth of its ecosystem, which includes a large community of developers, open-source libraries, and tools. The React community is known for its active and supportive nature, which makes it easy for developers to learn and use React.

**Performance:** React's virtual DOM and its efficient rendering mechanism help to optimize the performance of web applications built using React (Olga Melnyk, 2022). The virtual DOM is a lightweight representation of the actual DOM, which allows React to quickly compare changes to the UI and update only the necessary parts. This results in faster updates and smoother user experiences. React also uses a technique called reconciliation, which optimizes the way components are rendered by minimizing the number of DOM updates required. These performance optimizations can significantly improve the performance of web applications built using React.

**Cooperation with Backend:** Another main reason for choosing React is that it is compatible with Django, which is the backend technology that the other sub-team of our project team would choose. By integrating React into the Django environment, we can create a single-page application that uses React for front-end rendering and Django for back-end API services. This strategy can result in a more interactive and smooth user experience while also facilitating better code maintenance.

In conclusion, React is the most suitable technology for us in building user interfaces for web applications. Its ease of development, availability of libraries, maturity, flexibility, and popularity make it a preferred choice for us to complete our project frontend development.

## User Story Accomplished

As a student, while browsing the front page of the website, I came across a project that piqued my interest. I clicked on the project link to access the full details of the project. Once I finished reading, I wanted to return to the home page of the website and therefore clicked on the Home button located on the top-left navigation bar.

Requirements for the user story are: the link should take the user to the corresponding page, which contains the relevant information they clicked on. Additionally, the project page must include a Home button, which, upon clicking, should redirect the user to the homepage.

## Individual Contributions

Stephanie Chen has a role of a Frontend Developer and UX UI Designer. She works on HTML, CSS and javascript to develop the user interface. She also has to design the user interface and provide assistance in writing the frontend options and decisions made for the big team report.

ChengYue Zhang is a UX/UI designer. She works on writing HTML, CSS, Javascript to implement the basic features of the website, deploy the website, and notice other teammates

to complete the report and work on time. Besides, she also writes the website instructions for A2 report, and make comment on the report which Ray writes to improve it.

Ray Xu has a role as a Frontend Developer and works for several tasks, including HTML and CSS development. Ray also contributes on giving advice for the UI design such as the navigation bar margin, box border, etc. In addition, Ray contributes to writing sub-team paper reports and planning on future development.

## Instructions for web application

The project page can be directly accessed through url:

<https://csc301-2023-winter.github.io/assignment-2-10-1-chenx608-xuray2-zhan7289/src/index.html>

The source code is listed on github repository. Simply git clone the repository using this link:

<https://github.com/csc301-2023-winter/assignment-2-10-1-chenx608-xuray2-zhan7289.git> ,

and then click on src/index.html file to open up the homepage of the website.

## User interactions

The link above will direct the user to the home page of the website. Several faked internship projects would show up at the bottom of the page. If user is interested in one of the project and click on the project name, the user would be directed to the project page, which includes more specific details such as project abstract, organization and supervisor. Alternatively, if the user click on the link of organization or supervisor, the user would be prompt to the company's website or the supervisor's profile page (not implemented for A2).

(A)

The screenshot shows the homepage of the MScAC website. At the top is a navigation bar with links for Home, Contact, and About. Below the navigation bar is the title "MScAC". There are three search filters: "Internship Year" with a dropdown menu showing "2020", "Project Organization" with a "Choose organization" button, and "Academic Supervisor" with a "Choose supervisor" button. Below these filters is a search bar with the placeholder text "Enter a search term" and a "Search" button. Under the search bar, there is a suggestion for "Try one of the search terms: machine learning robotics". Below the search bar, there is a section titled "2022 Applied Research Internship Projects" which displays three project cards: "Project 1" (Organization 1, Supervisor 1), "Project 2" (Organization 2, Supervisor 2), and "Project 3" (Organization 3, Supervisor 3).

(B)



Figure 1. (A) Image of the homepage. (B) Project box would zoom out and show blue when move the cursor to it.

At the top of the page is the navigation bar, where “Home”, “Contact” and “About” are listed. Clicking on each button would prompt to the corresponding pages for information about the website (fake information for now).

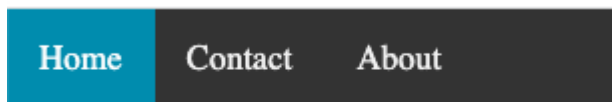


Figure 2. Navigation bar options

There are three filters for user to use. The functions of real filtering are not implemented yet, only the UI design is shown. If the user click on the filter, the available options would show up, and by clicking on one of the option, the selected option would replace the word in the filtering box to let the user know which option is chosen.

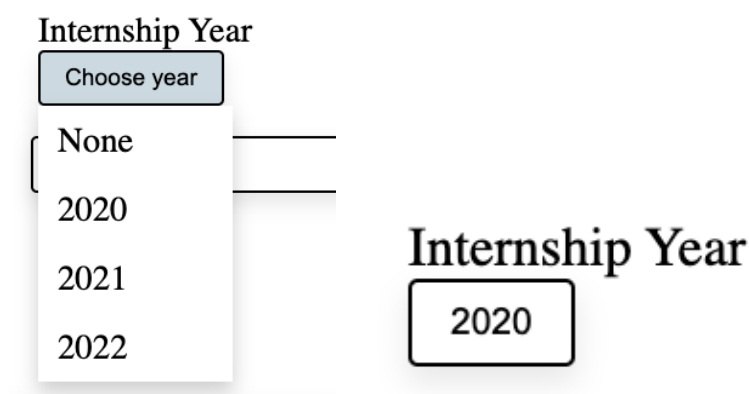
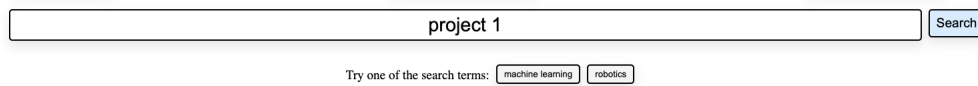


Figure 3. Options for the internship year filter. The chosen option would shown in the filter box, as shown in the figure at right side.

If the user want to search for a project by name, type the search term in the searching bar and then click “Search”. For A2 displaying purpose, it would prompt the user to the results

page where the projects that includes the search term would be listed. If no results are found, the page would show “No matched results” and a “Go Back” button to return to the previous page. If the searching bar is empty but user clicked on search, a message would show up to notice the user to input a search term.

(A)



project 1

Search

Try one of the search terms: machine learning robotics

(B)



Home Contact About

**Searched Results:**

Project 1  
Organization 1  
Supervisor 1

(C)

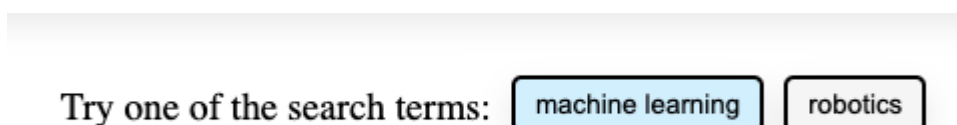


Search

Please type in a search term.

Figure 4. (A-B) Figure shows a search term of “project 1”. The result page would contain the project whose name is “project 1”. (C) A message would show up when search term is empty.

Below the search bar listed several tags for quick search. By clicking on the tag, it would automatically search for the projects that contain the tag values.



Try one of the search terms: machine learning robotics

Figure 5. Tags that would show blue when the cursor is moved onto it.