

COMSM0104-Web Technologies Report

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1 Introduction

Our team is comprised of Kehan Du (mz19460) and Shunyi Zhao (vt19049). The aim of our project is to construct the PC end official website of Deep KW Innovation Factory.

Deep KW Innovation Factory is the academic workshop of interdisciplinary at Huazhong University of Science and Technology, China. Since the establishment of Deep KW Innovation Factory in 2017, it has always upheld and practiced the concepts and methods of interdisciplinary, and insisted on exploring the question of social sciences by using natural science methods.

The central goal of this version is to construct of the official website framework and the dynamic realization of key pages and complete the initial launch of the official website. This version is just used to practice the skills of web technologies, and will not be used commercially. We have got the permission to do this website, and the final report will declare the copyright.

2 Page Design

The home page of this project is shown below:



Figure 1: home page and about page

3 Technology Evaluation

3.1 Estimation of marks

- A for HTML
- A for CSS
- A for JS
- B for PNG

- B for SVG
- B for Server
- B for Database
- B for dynamic pages
- 12 for Depth (out of 20)

3.2 Client Side

We chose a popular javascript framework, Vue.js (version 2.6.11), to develop these pages. Modularity and componentization are important features of Vue, allowing us to build complex applications with small, independent, and usually reusable components. And these components convenient for later maintenance and upgrade of the official website. We use webpack and npm manage the packages based on node.js, and information about these packages is shown in package.json. Works are placed in folder named `./src/components`. HTML, used as the template of every module, and CSS would control the layout and style of these modules.

Adobe Photoshop and Illustrator (Authorized) are used to design the blueprint of the website, and some .png file are created by them. Some icons, such as the logo of group, are drawn by SVG.

3.2.1 HTML

HTML is an integral part of the Vue component demonstrated as `<template>` tag. Vue.js uses an HTML-based template syntax that allows programmers to declaratively bind the rendered DOM to the underlying Vue instance's data. The advantage of Vue is it compiles the templates into Virtual DOM render functions. Combined with the reactivity system, Vue is able to intelligently figure out the minimal number of components to re-render and apply the minimal amount of DOM manipulations when the app state changes.

In our project, only one index.html document is used as the entrance, which is accessed through index.js. Other pages are all broken down into components, which are stitched together like building blocks. Compared with basic .html document, Vue's template HTML reduces the replication of many HTML statements. At the same time, the grammar in the Vue framework makes the data no longer nested in HTML statements, making the project itself more flexible.

In this project, BaseNav.vue (project/src/components/Common/BaseNav.vue) is a good example. This is a common Navigation component, which uses list rendering to render the navigation name(data) into HTML, and completes the task with a brief HTML statement.

```

<template>
  <div id="wholeNavi">
    <div id="dwLogo">
      
    </div>
    <ul class="nav-left-container">
      <li v-for="(item,index) in fatherList" :key="index" @click="getIndex($event,item.name)">
        <router-link :to="item.router">{{item.name}}</router-link>
        <ul class="nav-left-container-small" :class="item.name">
          <li v-for="(item,i) in list" @click="getIndex($event,item.name)">
            <router-link :to="item.router">{{item.name}}</router-link>
          </li>
        </ul>
      </li>
    </ul>
  </div>
</template>

```

Figure 2: The HTML codes written in BaseNav.vue

3.2.2 CSS

CSS is also an integral part of the Vue component demonstrated as `<style>`. The advantage is that the scope of CSS can be limited by adding the "scoped" attribute.

Vue supports a variety of CSS, Less, Sass style expression mode, this project uses basic CSS for style editing. At the same time, we also carried out basic beautification of some HTML parts with the help of Bootstrap4. The use of Flexbox in the layout, this method effectively improves the website screen adaptability.

Original CSS can be reflected in groups.vue (project/src/components/About/groups.vue).Finally achieving the predetermined goal of the design diagram.

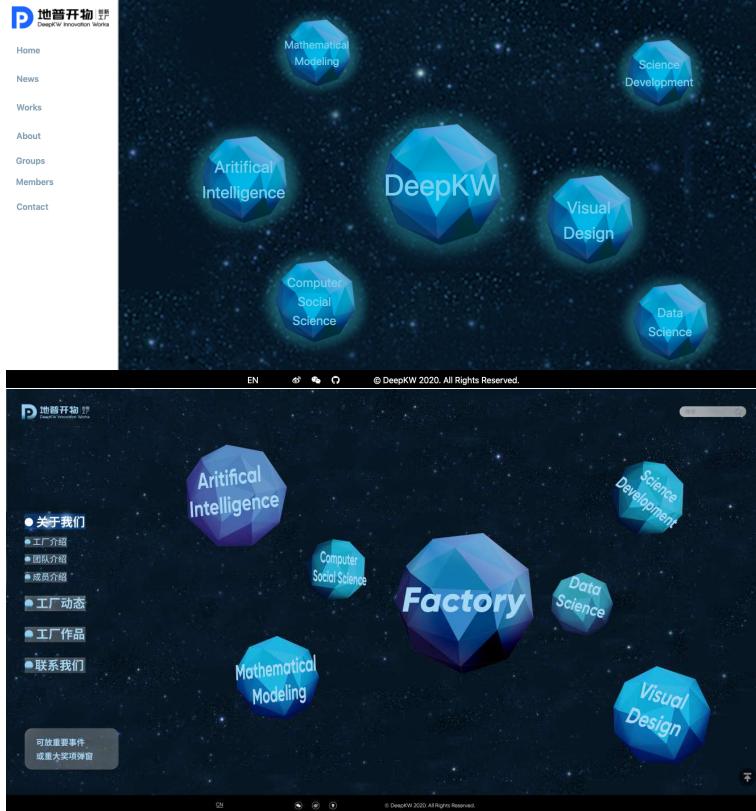


Figure 3:

3.2.3 JavaScript

3.2.4 PNG

Some images used in this project are drawn with GIMP 2. One of the examples, texttable.png which is used in `Contact.vue`, is shown below in Figure 4.

Firstly, we added three text objects into a 300×400 file, and then typed in some useful information. Then the coverages of these text objects are combined to fix the positions of them. The result of this stage is shown in the left image of Figure 4. And then, three rectangular layers are added, the result is shown in the right image of Figure 4.

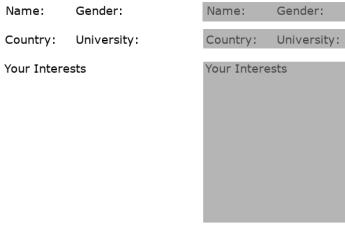


Figure 4: Left: the image after adding three text objects. Right: add three rectangles with 48.0 opaqueness.

3.2.5 SVG

3.3 Sever Side

3.3.1 Server

The development of Sever is also in node.js. We use *express* as the server framework.

3.3.2 Database

We choose *sqlite3* to manage our databases. We use four tables, including candidata, , in this project. The ER relationship of tables used in this project is shown below.

3.3.3 Dynamic Page

A good example of dynamic page in our project is the *Works* page. We use a method called `getAll()` in the file (project/src/components/Works/Selecter.vue). This method is also used in the created part of Vue, which could get the data of all the works stored in databases when this webpage is initialized. The layout of this page is shown below in Figure