Web Report
Academic Conference Search Project
ITCS210 Web Programming

By

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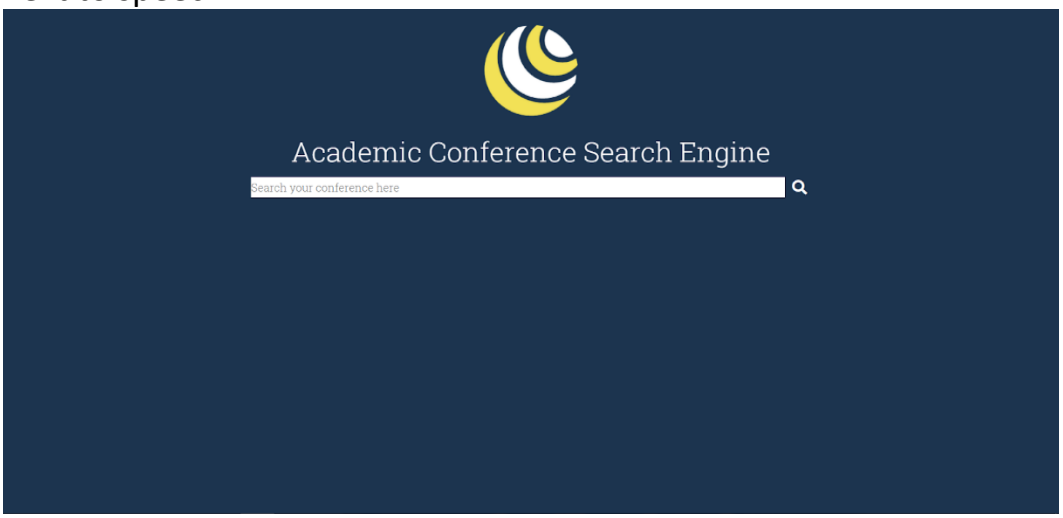
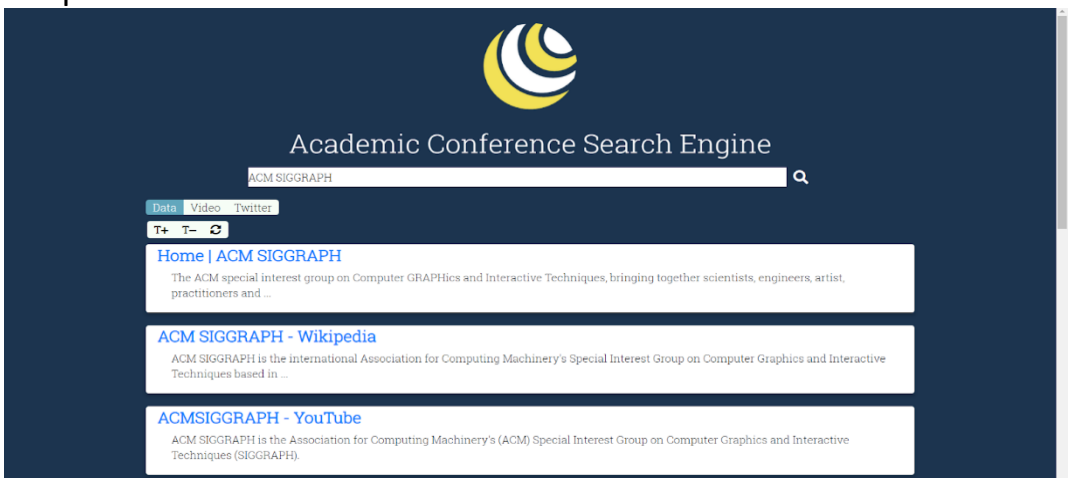
Section 1

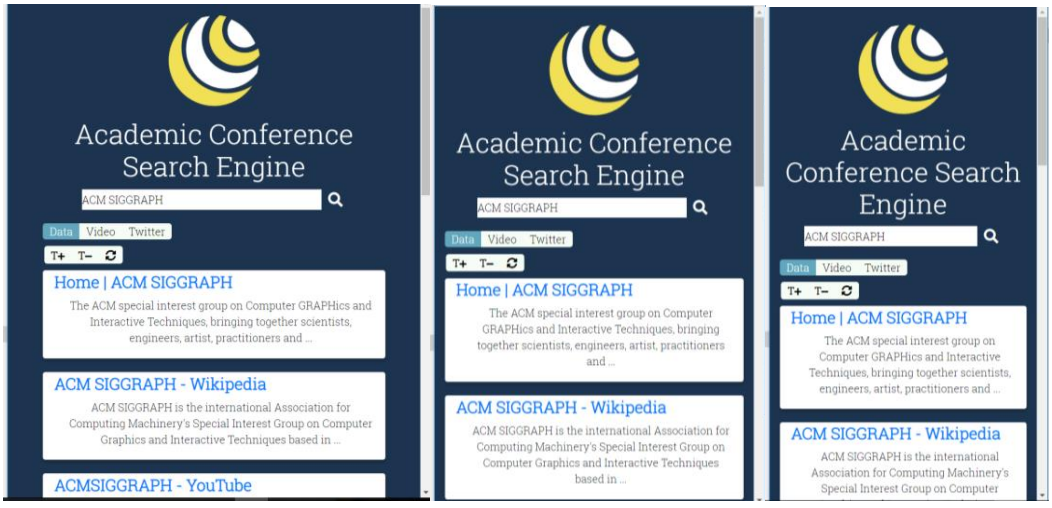
What have you done for Web Accessibility?

1. Text to speech



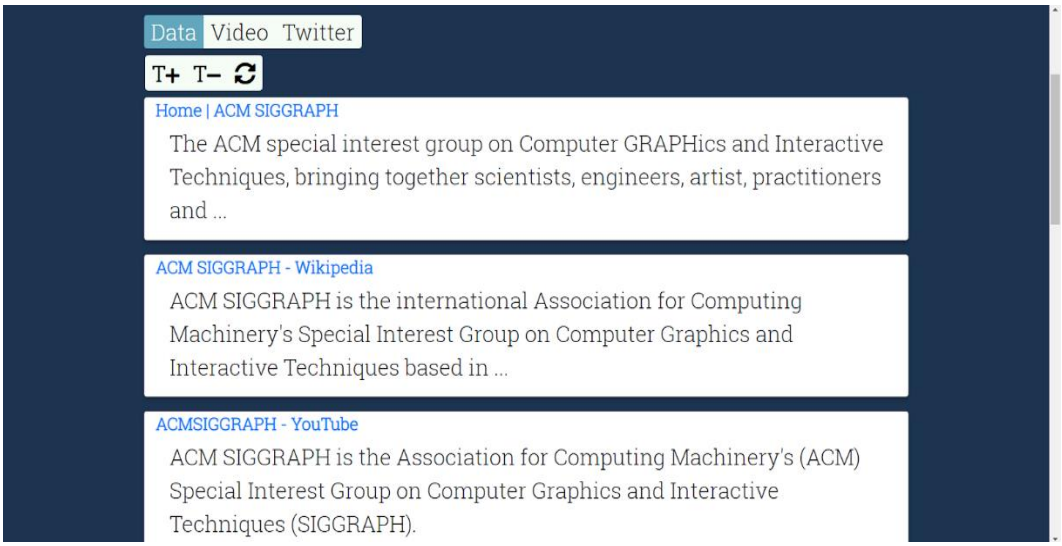
2. Responsive

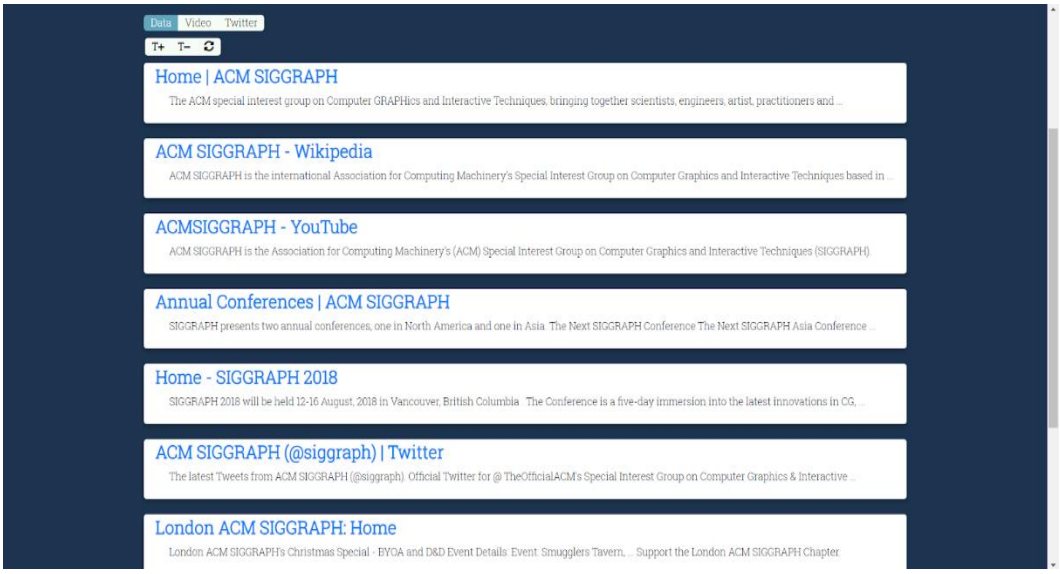




3. Text size modifier

- Which include Increase, decrease, and reset the text size.





Web Accessibility

There are numerous ways how web accessibility is ensured. Firstly, text-to-speech is provided on our website. Text-to-speech (aka. TTS) is known as the tool that generates audio from the selected text. Additionally, this will render the audio which is generated from the selected text. Moreover, this accessibility aid will benefit people who are visually impaired. For instance, dyslexia, blind and etc. This is confirmed by the fact that, traditionally, recordings on audiotapes were widely used by the blind community to access information in books, magazines, and newspapers. TTS will use the selected text and analyzed using optical character recognition (OCR). After that, the engine will search in the database to match with the selected one and concatenates them together. Subsequently, the audio finally renders. Consequently, the user can listen to audio and gain understanding from the text. Moreover, the audio will also extend the opportunities for those who have visual impairment condition.

Secondly, a responsive web design is created for this website. This is because web design has a tool that resizes the website, for instance, grids system, flexible images, and CSS3 media queries. As the result, the user can use to look at the website without losing the original design depending on the devices. For example, when the user switches from their laptop to an iPad, the website should automatically adapt to accommodate the change in resolution, image size, and scripting abilities.

Lastly, the font-size modifier was the last tool that was used to create web accessibility in this site. This tool will make the font-size of the text in the selection area adjustable according to the user's wishes. Furthermore, this will help the users who have a visual impairment and elderly people to use the website more comfortably and smoothly. The reason is font-size matters the most for readability. As the user can adjust the font size as they wish the readability of that context will be increased.

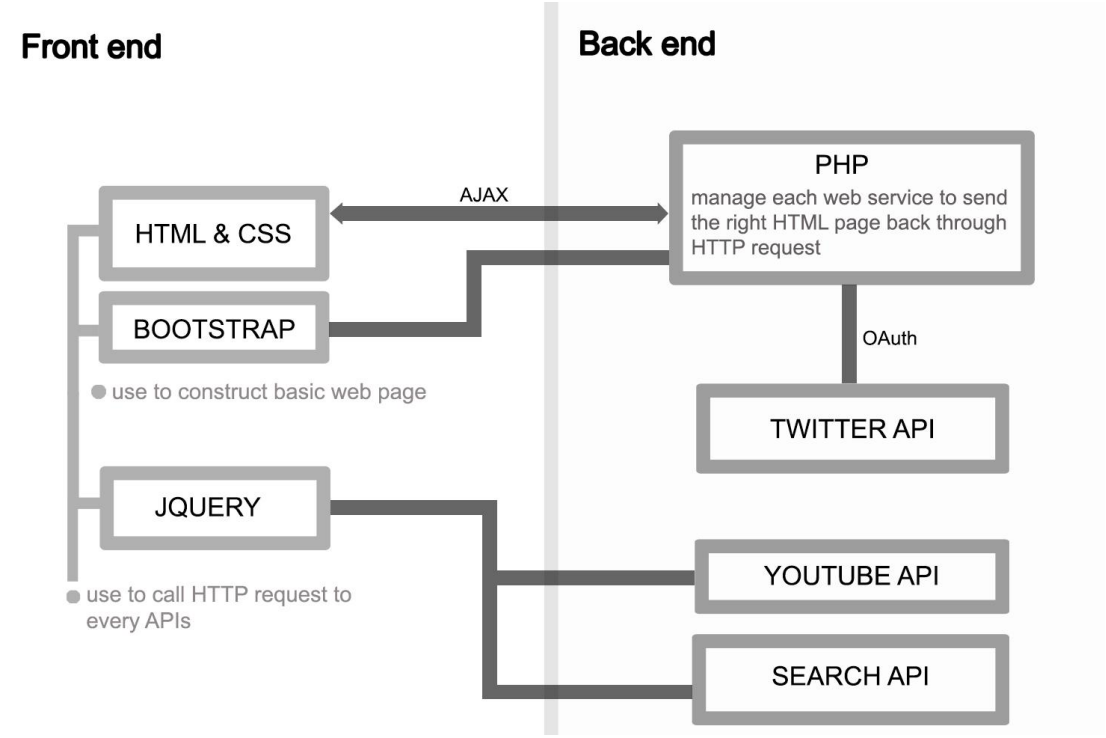
In conclusion, there are several web accessibility tools used to make this website accessible. If there are more web accessibility tools that can cover more hindrances while using this, this site will be more user-friendly than other sites.

How is your web application friendly comparing to the other web applications?

Ours website	vs	Google
- Specific information such as date, time, and place		- Provide general information
- All videos come from Youtube		- Videos come from varieties website
- Provide comment from the conference and sentiment analytical		- Does not give any comment and analysis about the conference

There are several different points between our website and Google. The first contrast is the data that is displayed on the site after a search. On the website, it shows specific information due to the search keyword coming up with information, such as the date, time, and place. The distinct details help the user know the necessary information immediately. In other words, the users don't have to scan for important detail from a bunch of data by themselves. On the other hand, Google, a famous search engine, presents data in the form of general information. Therefore, our site has more specific details than Google. Secondly, the video search functions differ significantly. This is because our site derives videos from YouTube only which makes the website content not that assorted. Conversely, the Google video search option shows videos from every website. Consequently, the availability of videos is more various than our site. Lastly, the option to leave feedback is considerably different too. The reason for this is that our site provides comments about the conference and sentiment analytic data from the participant by using twitter application. It helps the conference organizer know the feedback from the user directly so that current trends can be established. Moreover, it helps the organizer to determine if the conference is a success or not. In contrast, Google does not have any function where contributors can comment and participate in a response analysis. Hence, our site provides more useful feedback than Google. In conclusion, our site has many different functions which make our site both better and worse than Google. However, it still needs more improvements in order to make it better than Google.

How can you interact with all web services?



There are several approaches through which the program interacts with various web services through our website. The first approach is when the program receives the input data. The system will use jQuery to get that keyword and then sent to Google Custom Search engine. Google Custom Search is the service that enables the developer to create their own search engine. In order to make the search engine workable, the API is required. The reason why does it have to be the APIs is because they are used to show how a program interacts with the rest of the application world. There are several steps to get Google Custom Search. Firstly, access to the Google API Console by using a Google Account. Then request an API key and register your application. Thirdly, in order to make the application, submit API requests, the developer needs to create the project in the Google Developers Console and obtain authorization credentials. Lastly, go to the project page and enable your APIs. In more specific detail, our website will use jQuery to make the GET method which is an HTTP request to the website through which it can then retrieve the data in JSON format. Normally, the developer must set the base website in order to let the Google search for the most relevant website. After that, we will get the unique

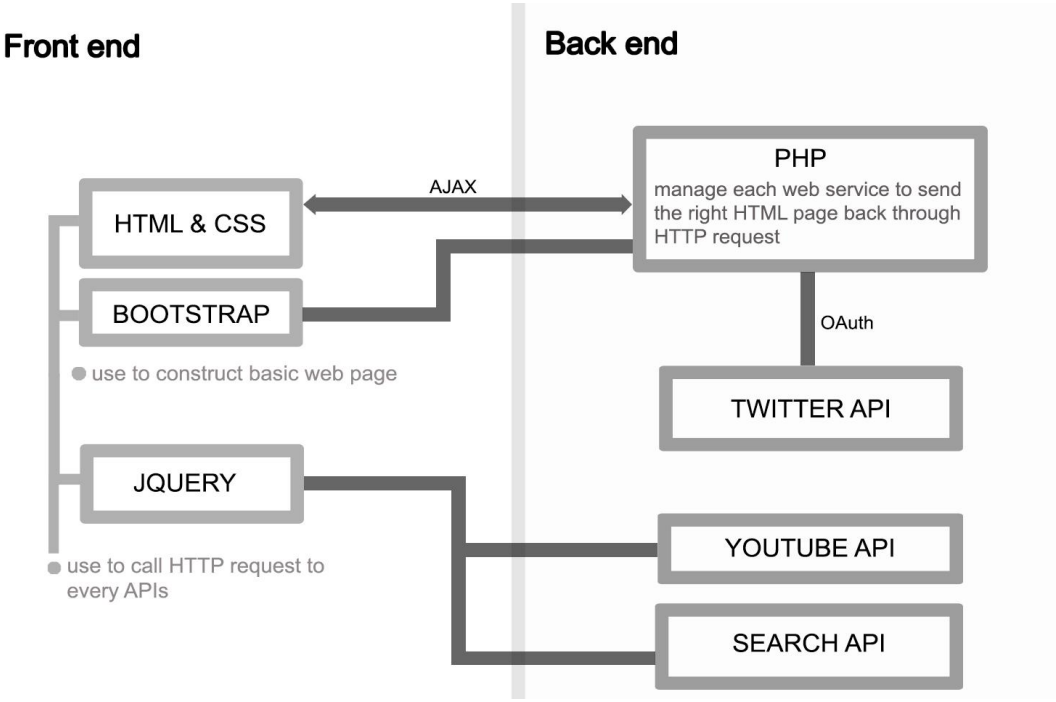
code for a custom search. Then the developers can extract the data that they need in order to display the data that the developers want.

Secondly, the YouTube data API is used to utilize the video search section. This website therefore also uses the jQuery and the GET method to retrieve the data in JSON format. Subsequently, it extracts data, such as the title, URL and image thumbnails display them all on the website. In addition, this section works identically like the custom search, but instead of using the Google custom search API, it used the YouTube Data API. There are several steps to get a YouTube Data API. The steps are almost identical to the request process of Google Custom Search API. What is different from the earlier one is the API key which the developer needs to go to the API library and select YouTube Data API v3.

Lastly, the developer uses PHP and TwitterOAuth to interact with the Twitter API. In order to access the API, a consumer key, consumer secret key, access token, and access secret token are required. All of these are provided by Twitter. However, the developer needs to send a request for them. Therefore, the developer needs to submit the application to Twitter in order to request a standard search API from twitter and extract the data into the designed form. Moreover, the tweets which receive can be used to analyze their sentiment and display in the graph format using Google Chart. Consequently, the website will use AJAX to send and retrieve the data and interact with the main page instantly.

In conclusion, the program can communicate with web services through three main APIs which are the Google custom search API, YouTube API, and Twitter API. In the future, to make the program interact with more various, information, the developer needs to add more web services and functions.

The architecture of the system



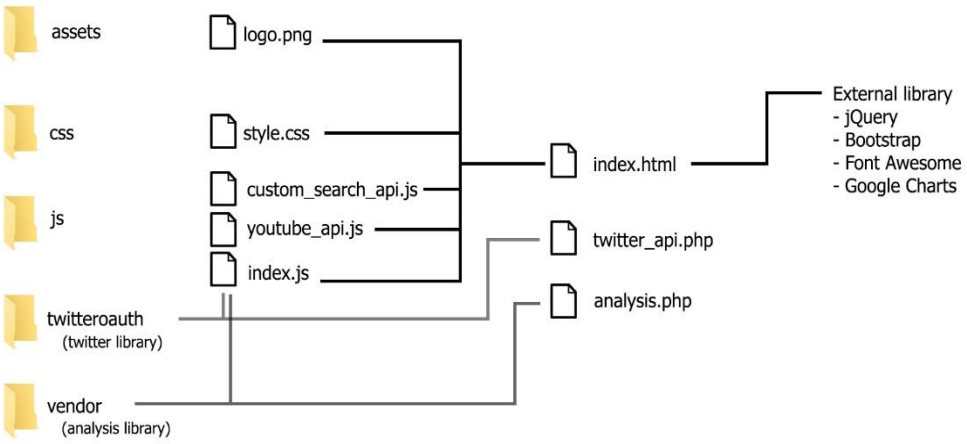
The system architecture consists of two principal components. The first main section is the front-end part of the architecture which includes all of the user interaction between the user and the website. This interaction can further be divided into two subsystems. Firstly, the HTML & CSS are used to provide a visual structure to the website according to the design. In addition, we use the Bootstrap, CSS library, to improve the visual design and give a responsive functionality to the website. Secondly, the use of the jQuery library appears in the project through the interaction of a request to the service provider. For instance, there is a GET and POST method, which is an HTTP protocol that can come from a jQuery, which make a request to Google API in order to get the desired data. For example, the name of the conference, the date of the conference, and the place of the conference.

The second main section is the back-end of the architecture which includes all the web services that were created by using PHP. In this process, we send a request to the Twitter API by using the OAuth service which will produce four unique keys in order to access the service from Twitter API through PHP. After we can access the Twitter service, we request all the tweets regarding the conference from the last 7 days and display it on the website. Also, we apply these

tweets to analyze their sentiment and create a sentiment analysis, which is the method of categorizing tweets into positive, negative and neutral by using the library called PHP analyzer. Furthermore, the graph that displays evaluation to the user was created by Google Chart API.

In conclusion, our system architecture is made up from two main systems which are the front-end and back-end of the service. The separation of this architecture makes our design simpler to implement and coherent throughout the design and programming of the system.

The structure of code



Our code structure is consisting of several files and folder that are all interconnected like the figure above here. The most important one is index.html which the centerpiece of the whole application. There three JavaScript files, two of them are used for all Google service API called and another is used for decoration and interaction of the web. There are also two PHP files which are used for Twitter API and sentiment analysis of tweets. Both of them are required a different library that includes in the code structure as well.

CURL

```
$curlHandle = curl_init();
curl_setopt_array($curlHandle, $options);
$response = curl_exec($curlHandle);

// Throw exceptions on cURL errors.
if (curl_errno($curlHandle) > 0) {
    throw new TwitterOAuthException(curl_error($curlHandle), curl_errno($curlHandle));
}

$this->response->setHttpCode(curl_getinfo($curlHandle, CURLINFO_HTTP_CODE));
$parts = explode("\r\n\r\n", $response);
$responseBody = array_pop($parts);
$responseHeader = array_pop($parts);
$this->response->setHeaders($this->parseHeaders($responseHeader));

curl_close($curlHandle);
```

Connect with Custom Search API

```
//API key
const APIkey = "AIzaSyBwdnMGnnef_olJQKcXr396eSmkCLGtrJs";

//cx id for the search engine
const cx = "000890759267133354411:-rqxnzcdshs";
```

```
//request to Google Custom Search API
function request(value) {
  const URL = ` https://www.googleapis.com/customsearch/v1?key=${APIkey}&cx=${cx}&q=${value}`;
  $.get(URL, function(data, status) {
    const listOfData = mapData(data.items); //map the data that we want to use
    listOfData.map(function(value) {
      $("#custom-search").append(
        displaySearch(value.title, value.description, value.link)
      );
    });
  });
}

//Detect when the submit button is clicked then fired the request
$("#submit").on("click", function() {
  let keyword = $("#searchinput").val();
  request(keyword);
});
```

Connect with YouTube API

```
//API key
const apikey = "AIzaSyBe4Hlu1O-J317pdBXWeZh9Cv2AMMrtEyI";
```

```
//fired the request after the submit button was clicked
$("#submit").on("click", function() {
  let keyword = $("#searchinput").val();
  const URL = `https://content.googleapis.com/youtube/v3/search?part=snippet&maxResults=20&q=${keyword}&key=${apikey}`;
  $.get(URL, function({ items }, status) {
    items.map(function(value) {
      $("#youtube-search").append(
        displayYoutube(
          value.snippet.title,
          value.snippet.thumbnails,
          value.id.videoId
        )
      );
    });
  });
});
```

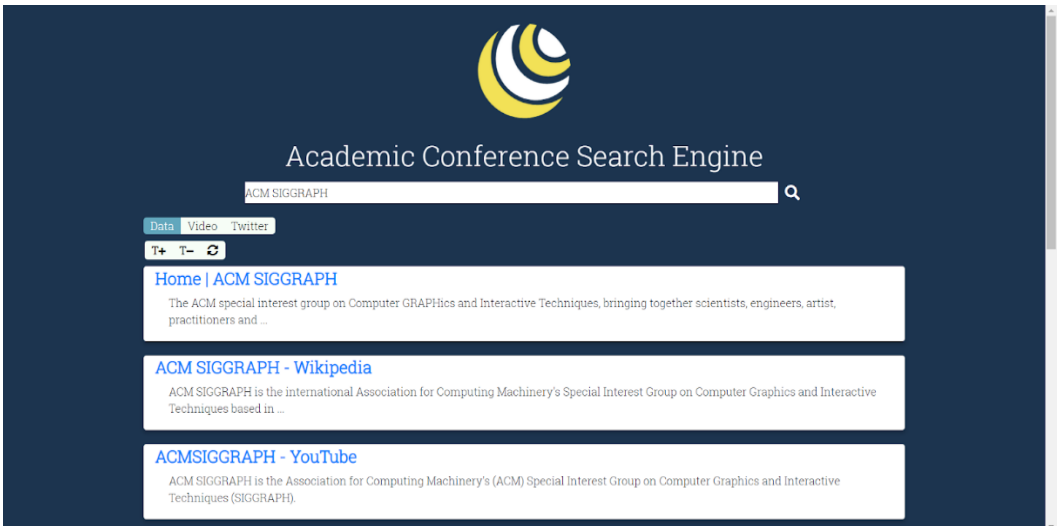
Connect with Twitter API using AJAX

```php
//Check if there is a keyword that has been sent form index.html
if(isset($_GET['key'])){
    //token
      define("CONSUMER_KEY","kqgX6CivEWfJre7dPFtxHkWhr");
      define("CONSUMER_SECRET","ou8lGMShiEdyGSkSTgjeFRWNX2JbSrzRONShmDjRx6pHgLy9vW");
      define("ACCESS_TOKEN","1066363490539995136-v8yXaLFNTERLCnNTIBOc7Wd2eM2C3q");
      define("ACCESS_TOKEN_SECRET","JYqqzF2hWiWJPxs5M0Rx8UbBoDiHofp0G0nhXtbSeBMpS");
      //query
      $query = array(
        "q" => $_GET['key'],
        "count" => 20,
        "result_type"=>"recent",
      );
      //function that bring query and sent it to search in Twitter API
      function search(array $query){
          $connection = new TwitterOAuth(CONSUMER_KEY,CONSUMER_SECRET,ACCESS_TOKEN,ACCESS_TOKEN_SECRET);
          return $connection->get('search/tweets',$query);
      }
      //Bring the result to the render method
      $result = search($query);
      $_SESSION['tweets'] = $result;
      render($result);
}
```

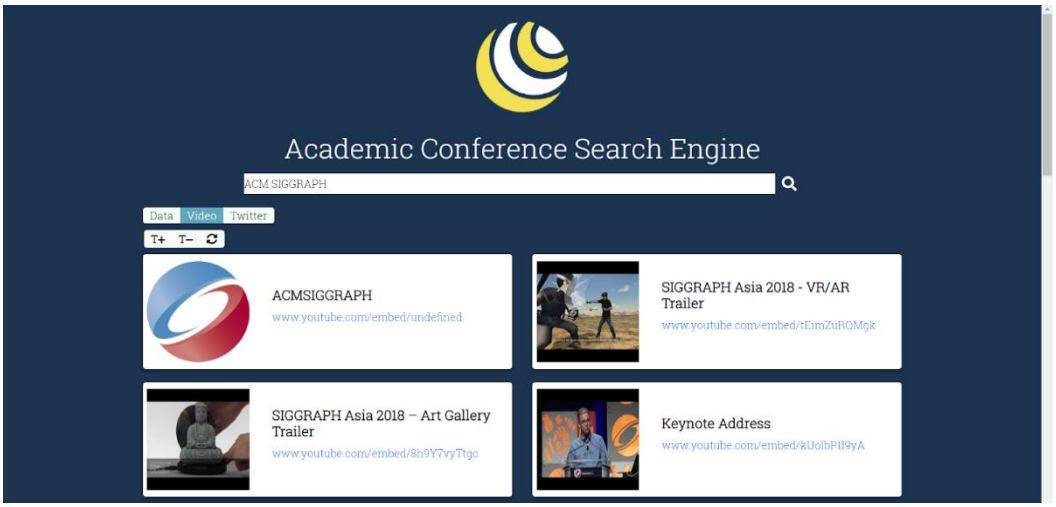
```javascript
//ajax to call twitter_api.php
const xmlhttp = new XMLHttpRequest();
xmlhttp.onreadystatechange = function() {
  if (this.readyState == 4 && this.status == 200) {
    document.getElementById("twitter-search").innerHTML = this.responseText;
  }
};
xmlhttp.open("GET", "twitter_api.php?key=" + keyword, true);
xmlhttp.send();
```

The screenshots of each function

1. Information search

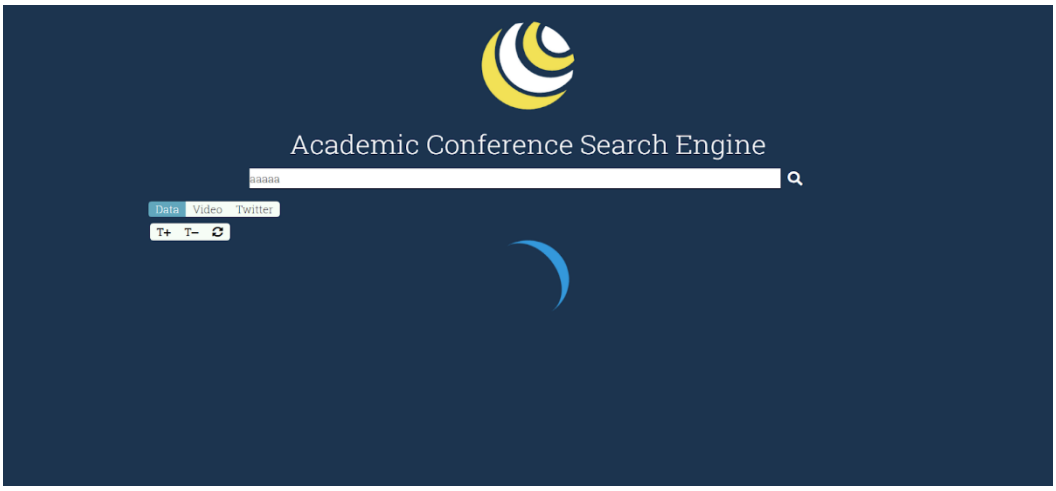


2. Video search

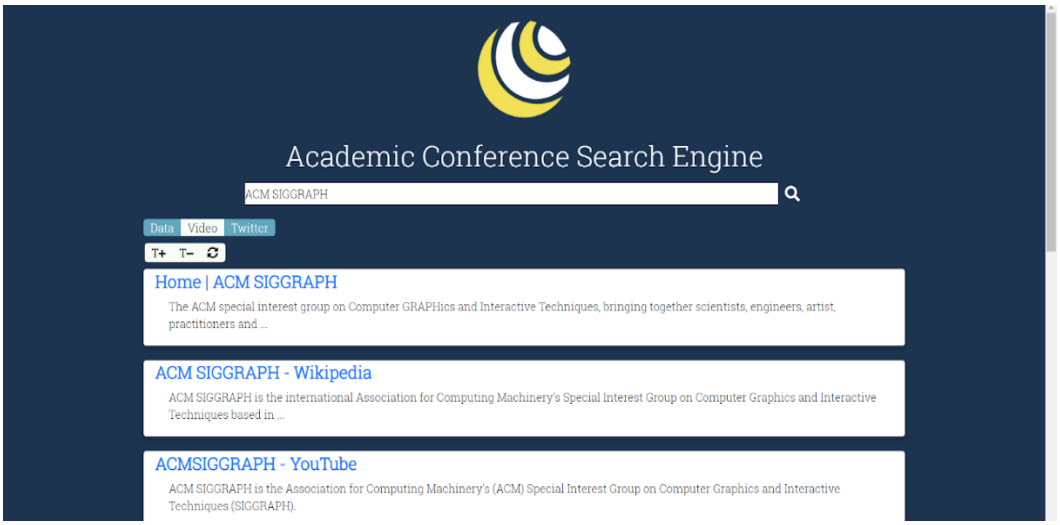


3. Twitter search

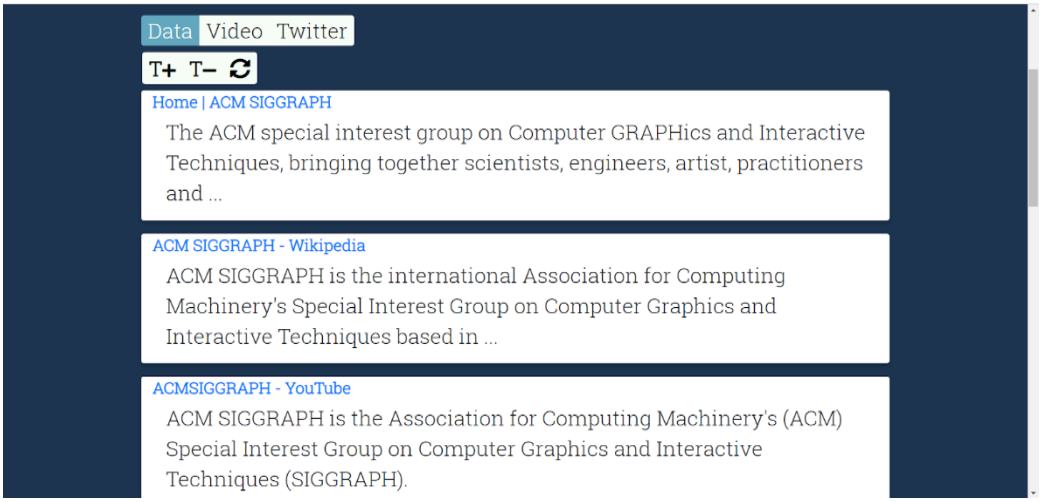
4. There will be the launching animation appears after the user inputted the data in a search bar and clicked the search button.



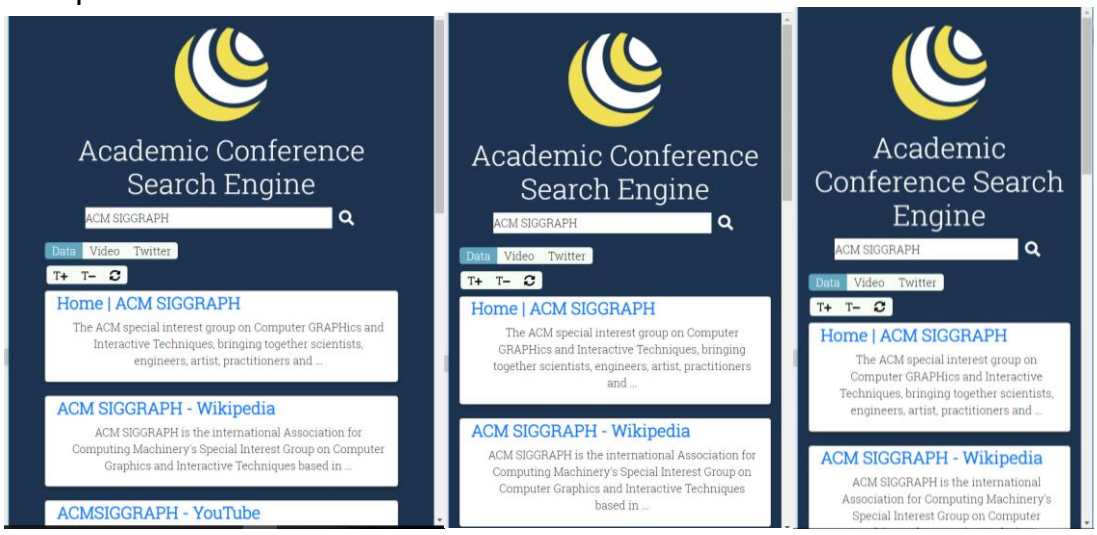
5. The bar will be hover on the name of the page bar that the user is using on the tab bar. Moreover, it will also hover after the user drops the cursor on the bar.



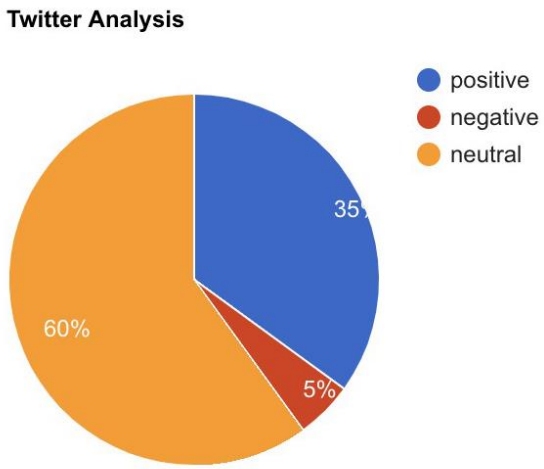
6. Increase / Decrease / Reset font-size



7. Responsive



8. Sentiment Analysis



9. Text to Speech