

COMP3032J 2021-2022 Online Music Playing System  
Group4 : Atom  
User Document

**Chunyu Li** 18206177  
**Yunkai Li** 18206372  
**Haotian Li** 18206169  
**Zhongqi Kang** 18206175  
**Xuhui Shi** 18206370

**SUPERVISOR:** Dr.Mooney Catherine, Dr.Becker Brett, Dr.Shen Wang,  
Dr.Ruihai Dong, Dr.Henry McLaughlin

# Contents

<b>1</b>	<b>Introduction</b>	<b>3</b>
1.1	Target Users . . . . .	3
1.2	Test Accounts . . . . .	3
<b>2</b>	<b>Functionalities</b>	<b>3</b>
2.1	Sign Up . . . . .	3
2.2	Sign In . . . . .	4
2.3	Music Show . . . . .	5
2.3.1	Listening . . . . .	5
2.3.2	Hearing Protection . . . . .	5
2.3.3	TikTok-Style Playing . . . . .	6
2.3.4	Music Detail Presenting . . . . .	6
2.4	Music Retrieval . . . . .	7
2.5	Account Management . . . . .	9
2.5.1	Information Showing . . . . .	9
2.5.2	Information Editing . . . . .	10
2.5.3	Password Changing . . . . .	11
2.6	Music Recognition . . . . .	12
2.6.1	Audio File Uploading . . . . .	12
2.6.2	Web Recording Uploading . . . . .	13
2.7	<b>Music Recommendation</b> . . . . .	17
2.8	Footprint . . . . .	17
2.9	Log Out . . . . .	18

# 1 Introduction

In this user document, a detailed introduction of the project ("cloud music playing" system) will be given.

**Please use popular browsers such as Chrome or Edge to experience the same functionalities and effects as a demonstration!**

## 1.1 Target Users

This website is aimed at music lovers or people who like to listen to music (especially young people). The site uses vibrant colors and design styles to satisfy users' preferences for pop music. Similarly, in addition to the standard free listening function, the site provides additional support for the following three types of users to better meet their needs for searching for songs and obtaining similar pieces:

- Users who already have the melody or audio of a song but do not know the specific song title and other information;
- Users who like songs but don't know what genre they belong to or want more similar music;
- Users who want to escape fixed labels and experiment with different styles;

## 1.2 Test Accounts

**Deployment servers and testing accounts:**

The user can access the system through the specific URL: <http://csi420-01-vm3.ucd.ie>

The user can access the system with the following account: username: **crazychild** password: **123**

The user can also access the system with the following account (back-up): username: **kzq** password: **123456**

# 2 Functionalities

## 2.1 Sign Up

Before entering the main system, the user needs to first sign in with valid account. If the user has never used the system, please click the "sign up" button in the right half to enter the registration page[1].

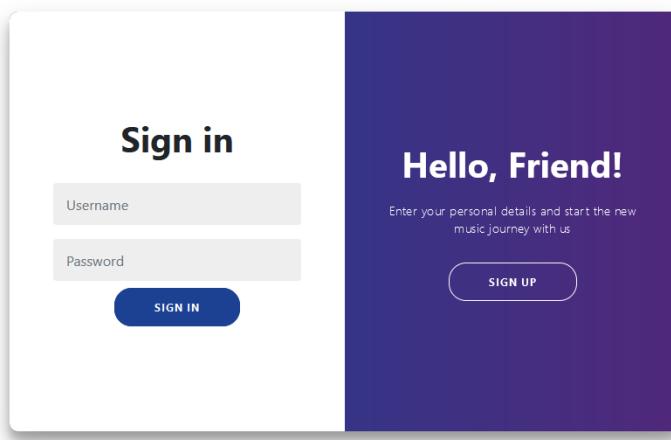


Figure 1: The Sign Up Page

The user need to enter the username (unique), email address (unique), and password to create a new account for you (Note: the registered email address need to be valid) [2].

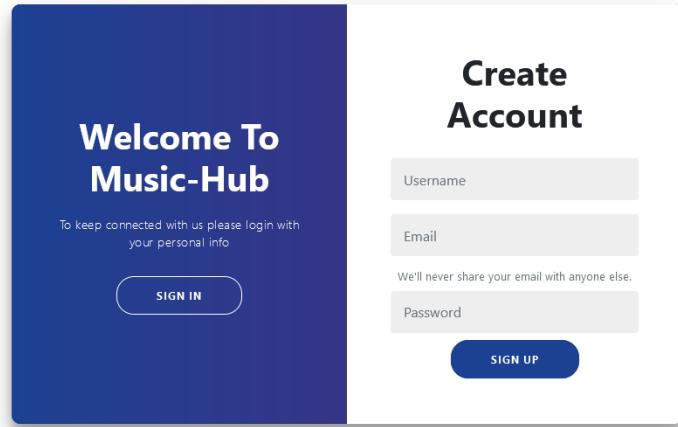


Figure 2: The Create Account Page

## 2.2 Sign In

After registering a account, the system will pop up a notice and automatically jump to the sign in & sign up page if it is a valid registration[3].

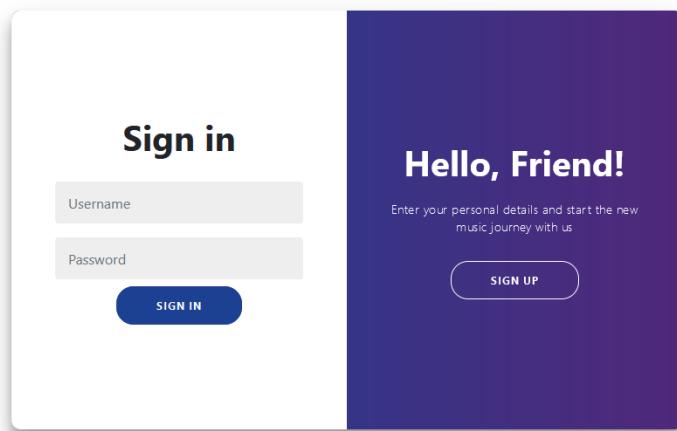


Figure 3: Case 1: The Sign In & Sign Up Page

Otherwise, the user need to modify invalid information (Please ignore it if your account is valid)[4].

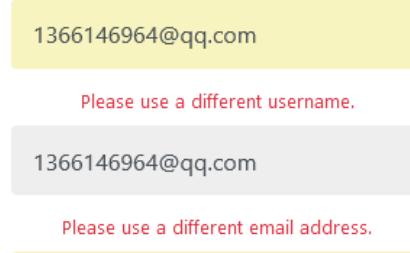


Figure 4: Case 2: The Invalid Information

Then, the user need to click the "sign in" button in the left half to enter the main system with valid input as well[5].

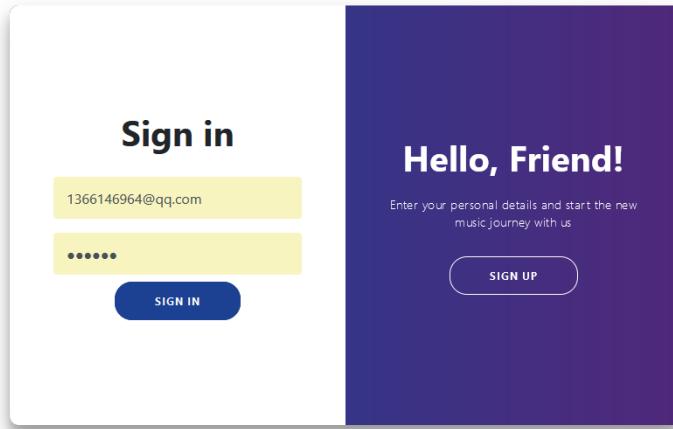


Figure 5: The Sign In Page

## 2.3 Music Show

### 2.3.1 Listening

By clicking the "Play Music" button on the left navigation bar, the user can see the main page of our website (**Due to network limitations of the server and communication limitations of the API, the songs take about 10-20 seconds to load[6]**). The user needs to turn on the first music manually by clicking the play button, after which the music will play automatically according to the user's actions.

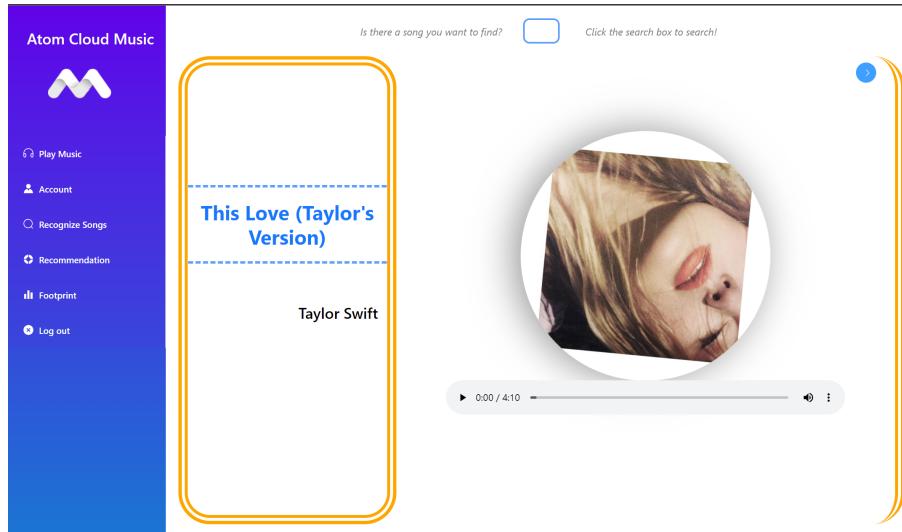


Figure 6: The Music Show Page

### 2.3.2 Hearing Protection

The system will record how long users listen to songs to ensure that users do not overindulge during a single use of the listening function to ensure the user's ear health. If the user listens to the song for a long time, the system displays a warning window. (**Note: The current system sets the reminding time as 5 minutes.[7]**).

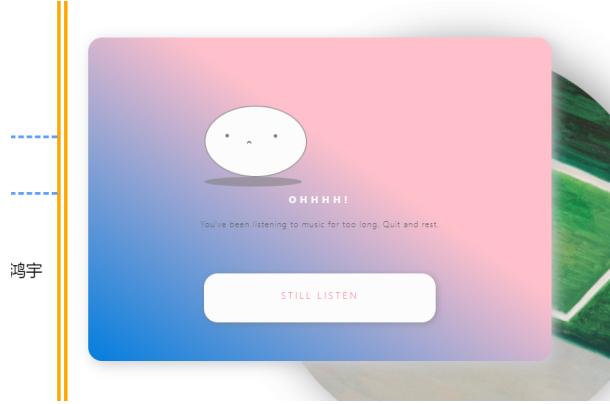


Figure 7: The Hearing Protection Window

### 2.3.3 TikTok-Style Playing

After clicking the "still listen" button in the hearing protection window, the user can use the mouse wheel to switch up and down, changing the current music.

### 2.3.4 Music Detail Presenting

When the user hears the music you like, the user can click the "go for detail" button (being pointed by the red pointer in the picture below) to get more details about this music[8].

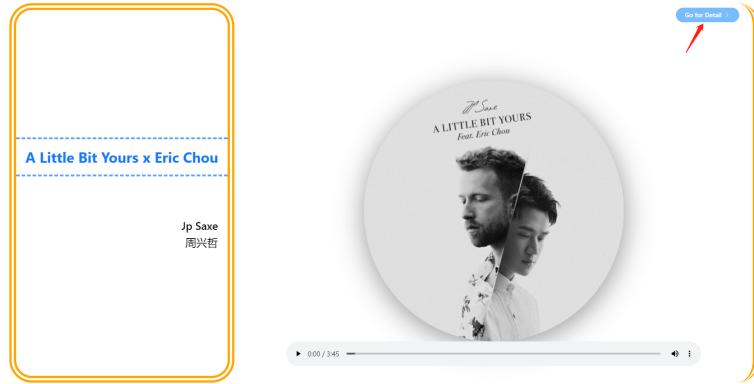


Figure 8: The "go for detail" Button

The conceptual detail page is shown below, and your preference would be recorded if the user clicks the "like" button (being pointed by the red pointer in the picture below) in the detail page[9]. In addition, if the lyrics show problems such as occlusion and overlap, click the play button to adjust and repair automatically.

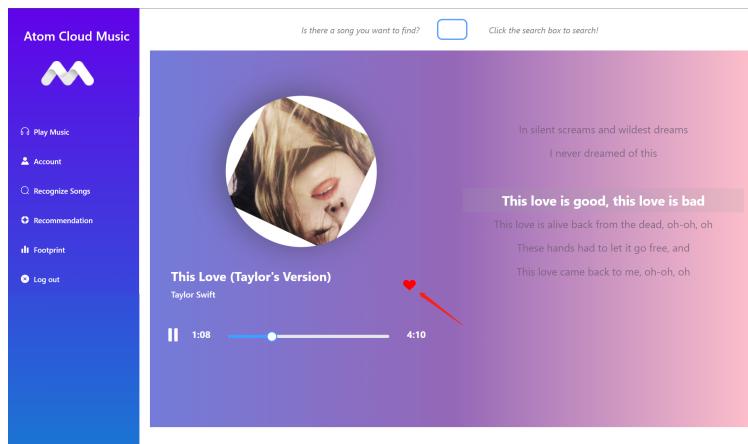


Figure 9: The "like" Button in Detail Page

## 2.4 Music Retrieval

When the user wants to search for specific music, the user can type keywords for searching into the search box (being pointed by the red pointer in the picture below) at the very top part of the main page. The user can hover the mouse over the input box, which automatically stretches. Click the input box and enter what you want to search for.

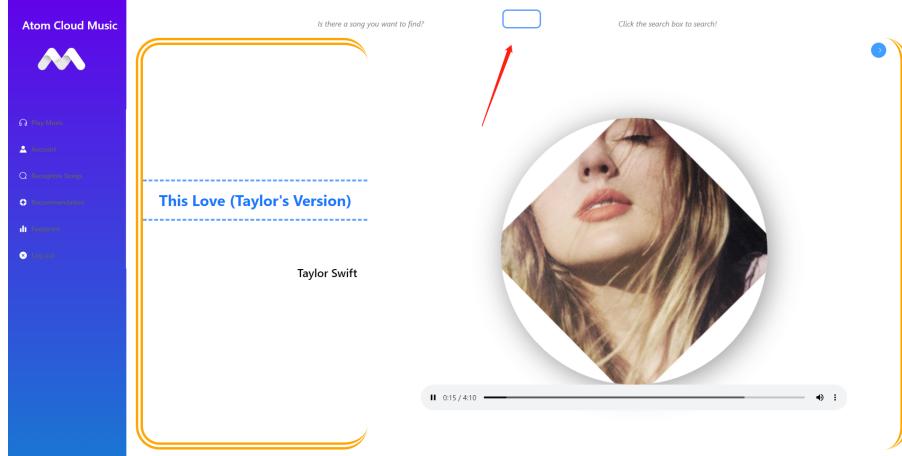


Figure 10: The Search Box

During the search, the system collects and provides the current hot search list for users' reference. Users can also click on items in the popular search list to search.

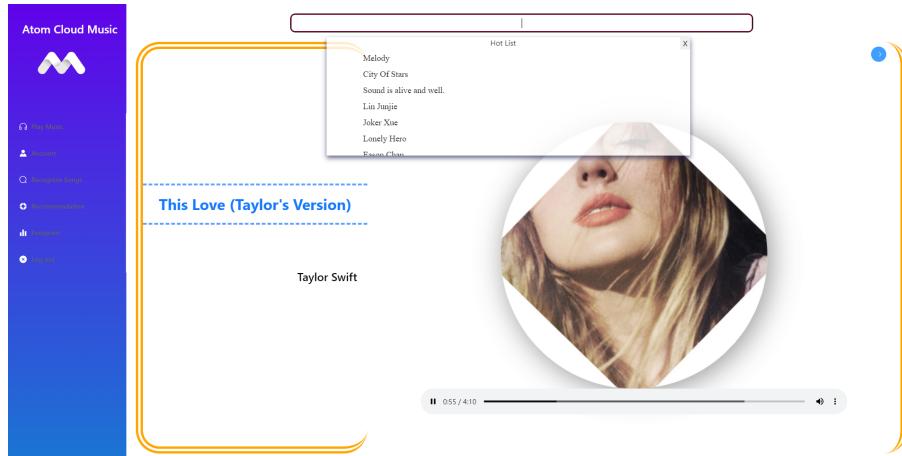


Figure 11: The Hot List

After entering the keywords, the IR subsystem will return a search result with a series of high-matching music. All of them are available to listen to after clicking it. **After completing the search, users should click the Close button to manage the search results menu and the hot search list menu.**

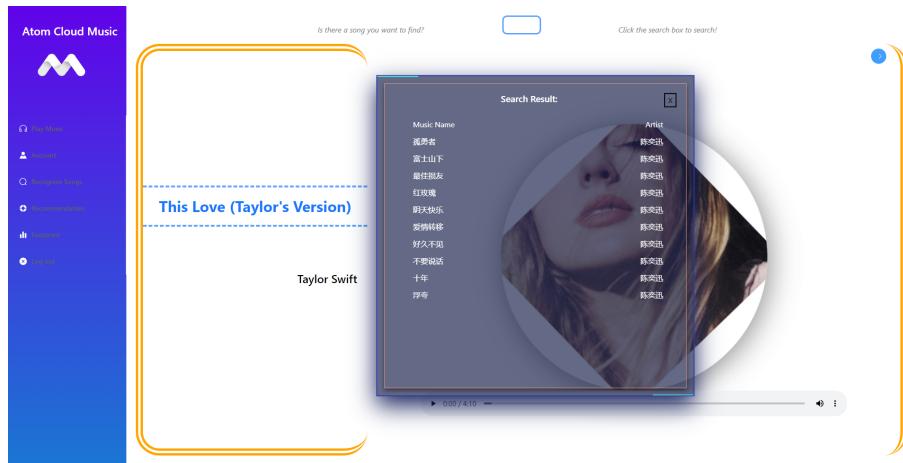


Figure 12: The Search Result

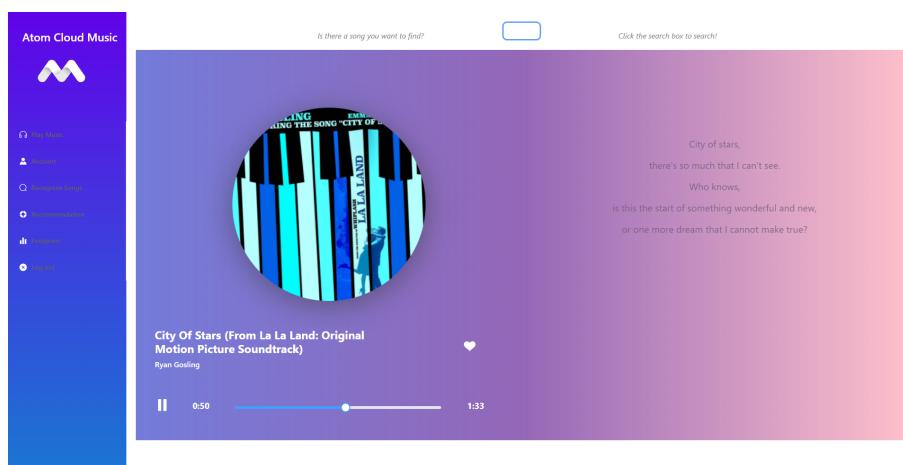


Figure 13: Search Result Show Page

## 2.5 Account Management

Before experiencing the following functionalities, the user should click the "Account" button (being pointed by the red pointer in the picture below) in the left bar[14]. This part shows the process of personal account management, including demonstrating, modifying, etc.

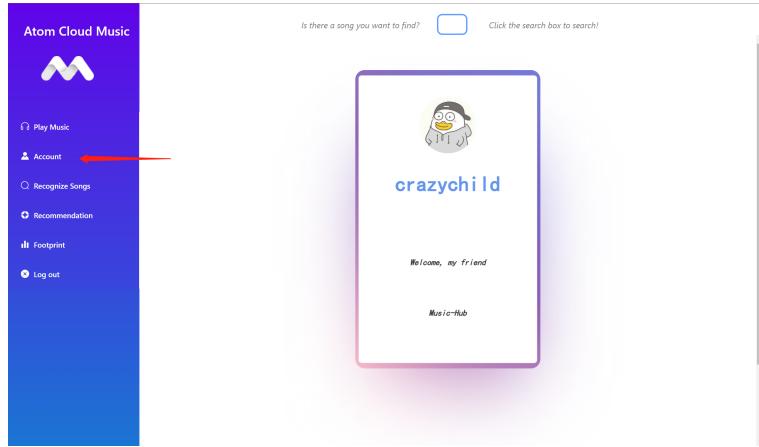


Figure 14: The "Account" Button

### 2.5.1 Information Showing

Personal information will be presented in the form of cards. Users directly view the system design of the user card content. At the same time, when the user places the mouse on the right card (being pointed by the red pointer in the picture below), the personal detail information will appear after the animation. If the user removes the mouse, it will cancel the display, protecting the user's privacy from others[15].

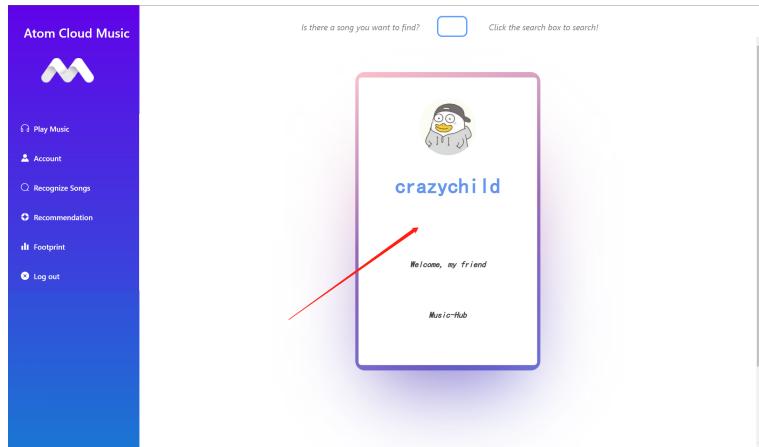


Figure 15: The Brief Box

Also, the personal information page after animation is shown below[16].

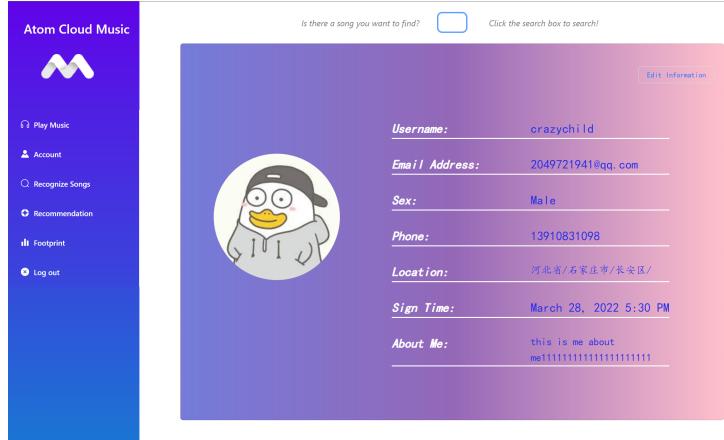


Figure 16: The Personal Information Page

### 2.5.2 Information Editing

If the user wants to change the information, the user can click the "Edit Information" button (being pointed by the red pointer in the picture below)[17].

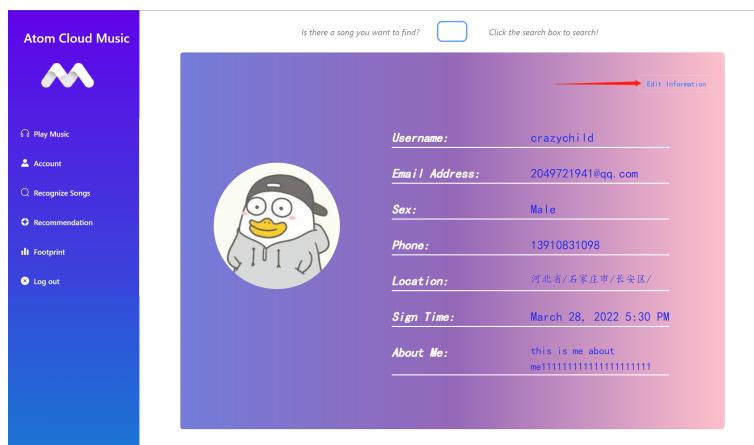


Figure 17: The "Edit Information" Button

The system will jump to the editing page, where the user can change basic information, location, and "about me" by clicking the above sections (being pointed by red pointers in the picture below). Also, the user must save changes by clicking the "submit" button (being indicated by the blue pointer in the image below)[18].

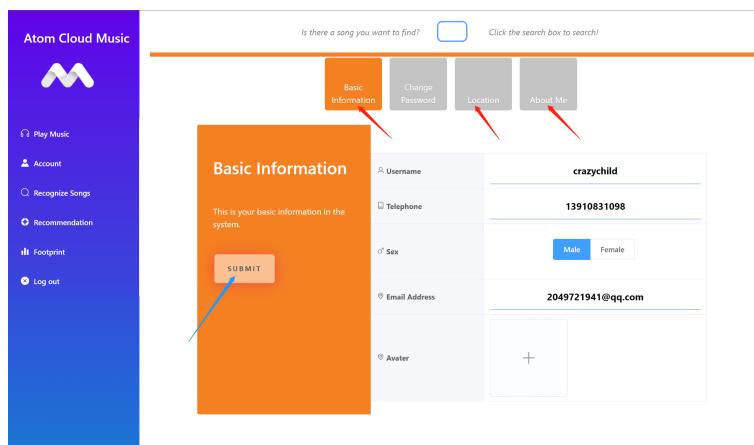


Figure 18: The Information Editing

### 2.5.3 Password Changing

Similar to the personal information editing, the password changing can be operated by clicking the "change password" section (being pointed by the red pointer in the picture below) respectively. Also, the user must save changes by clicking the "submit" button (being indicated by the blue pointer in the image below)[19].

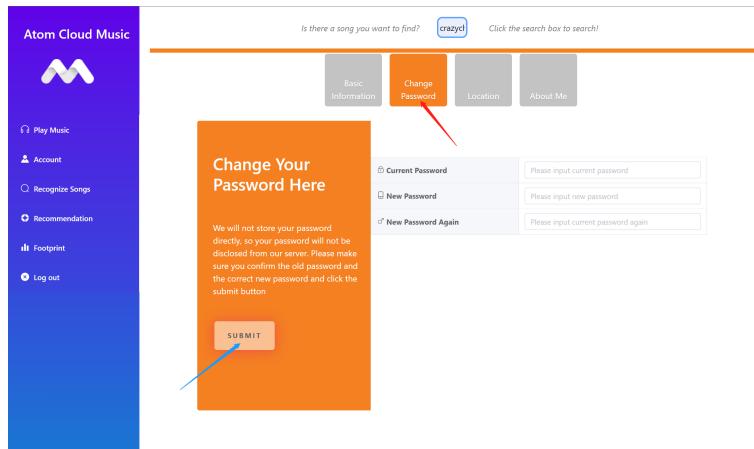


Figure 19: The Password Changing

Additionally, the current password needs to be correct, and the twice typing of a new password needs matching as well. Otherwise, the changes won't submit successfully. However, the system will give feedback to instruct you.

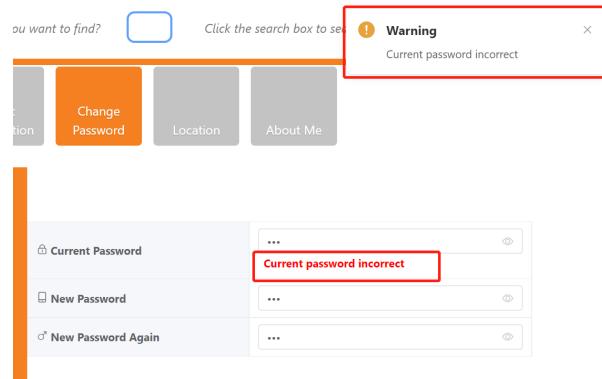


Figure 20: Change Password Warring

## 2.6 Music Recognition

Song recognition function provides users with an audio search function. Users can choose to upload existing audio files or record their computer audio to help us identify songs.

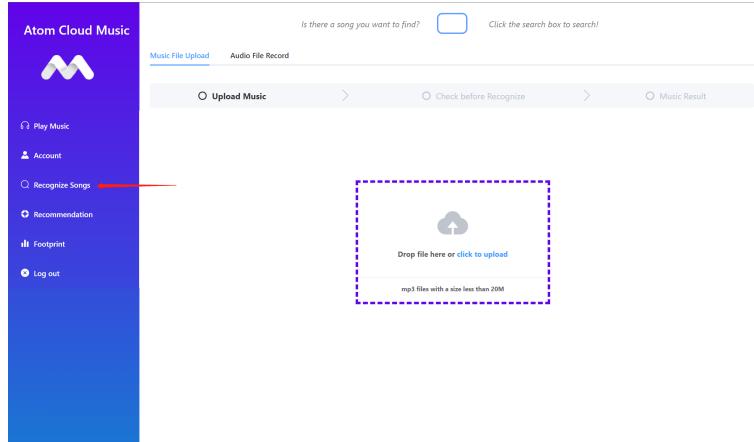


Figure 21: Music Recognition Entry

### 2.6.1 Audio File Uploading

The purpose of this feature is to analyze songs from audio files uploaded by users and obtain song titles. The user can upload the audio file to take music recognition in the default mode.

**Due to the limited server capacity, the system can't upload all music to the cloud. As a result, it can only recognize some popular music. To make sure the functionality can be tested, the input audio files (only for the functionality of audio file uploading) are provided in this URL:<https://drive.google.com/drive/folders/1mlQ5hT992MhujNWW2Tb0xw-qDbPWZ5Xm?usp=sharing>**

The complete upload steps are as follows:

#### 1. Select Upload file

The user clicks on the position shown in the picture and selects the MP3 file to upload on the local computer. Or drag the local file directly to the location shown by the arrow.

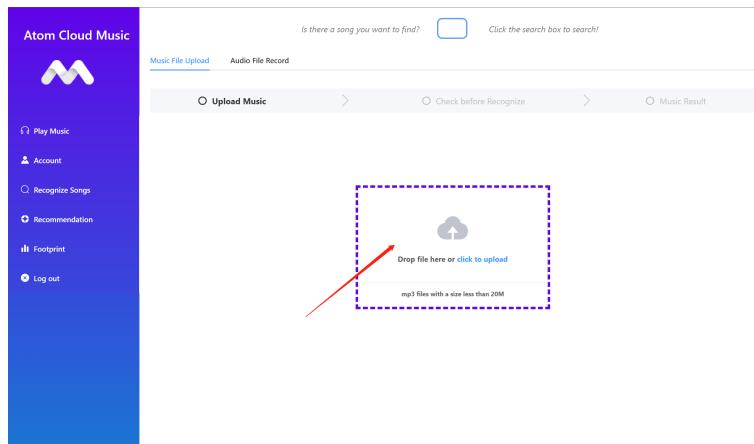


Figure 22: The Audio File Uploading

#### 2. Confirm and start recognition

In this step you will see that the server receives feedback about the uploaded file. Click the recognition button (Shown by the red arrow) to start recognition after the user confirms it.

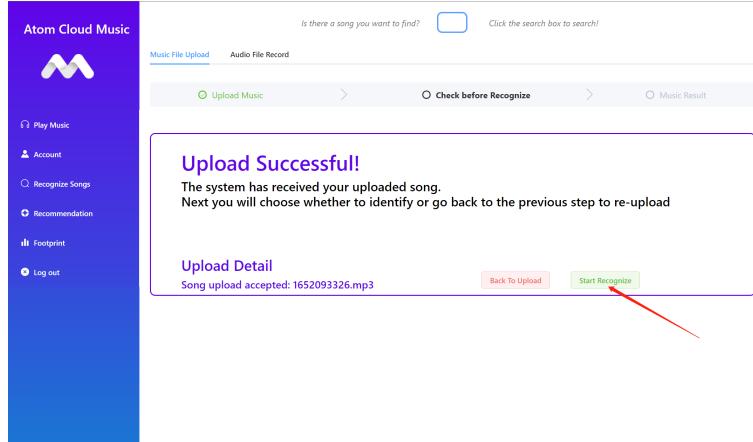


Figure 23: Confirm Upload

### 3. Result

After being processed by the system, users can see the displayed results. If the output is None, no result is identified. This is probably because the uploaded audio is not in the system database.

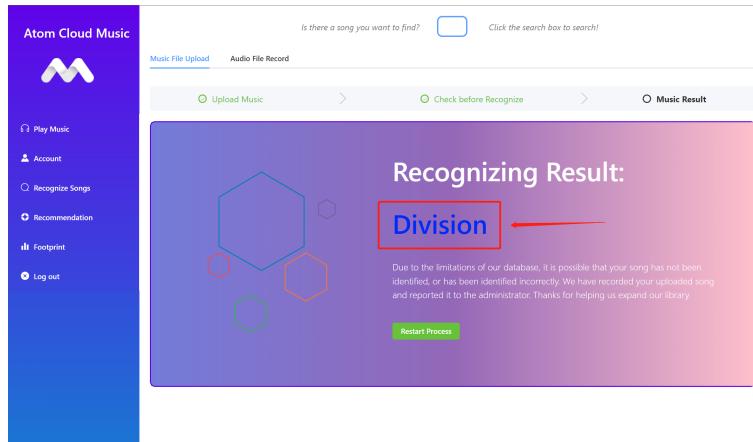


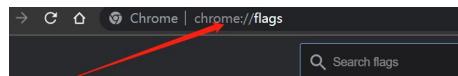
Figure 24: Recognition Result

#### 2.6.2 Web Recording Uploading

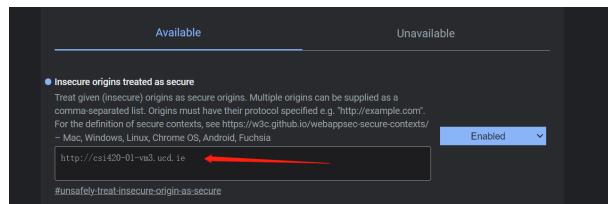
In addition to the above way of uploading music files, the site also allows users to directly record computer audio. Due to restrictions and security permissions on HTTP websites set by Google and other browsers, you need to set microphone permissions and recording sources before using this function. Let's take Google Chrome as an example.

The first is to get access to the browser's microphone.

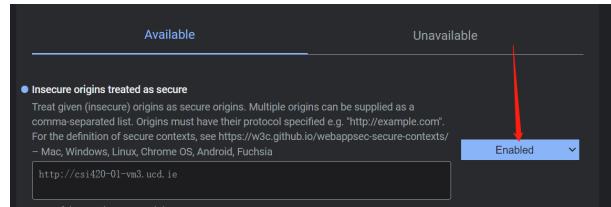
- Enter "chrome://flags" in the browser navigation bar;



- Enter this project url in "Insecure origins treated as secure" : <http://csi420-01-vm3.ucd.ie>



3. On the right, click "Enable"



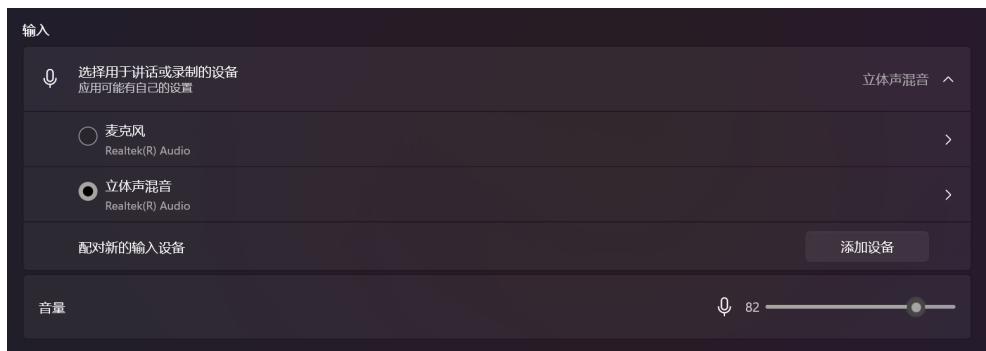
4. Click the "Relaunch" button at the bottom of the browser to restart the browser



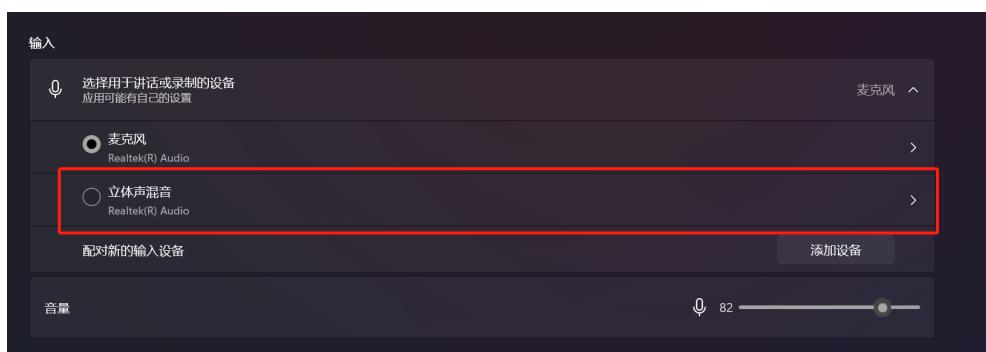
5. Then re-enter the site;

After completing the above steps, the browser has obtained the appropriate microphone rights. Next we need to change the audio input source to local audio. Complete the following steps:

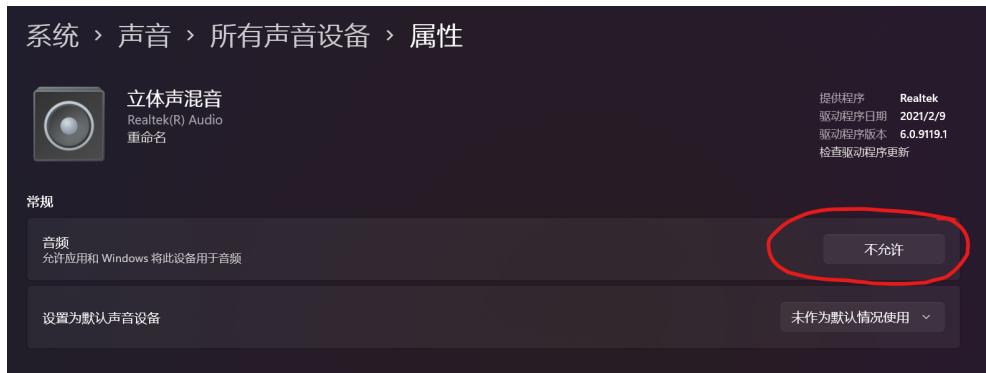
1. Open the computer Settings (here to Win11 Chinese version as an example), select system → Sound → Senior → Input



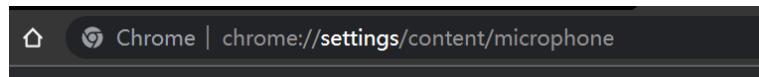
2. In the interface list, find and select "Stereo Mix";



3. After clicking in, set the first item to allow;



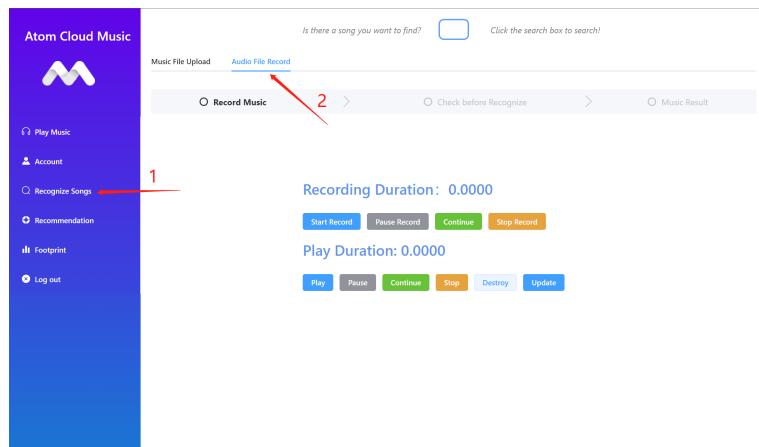
4. Back to the browser, enter the following in the Google browser navigation bar into the microphone Settings page: chrome://settings/content/microphone



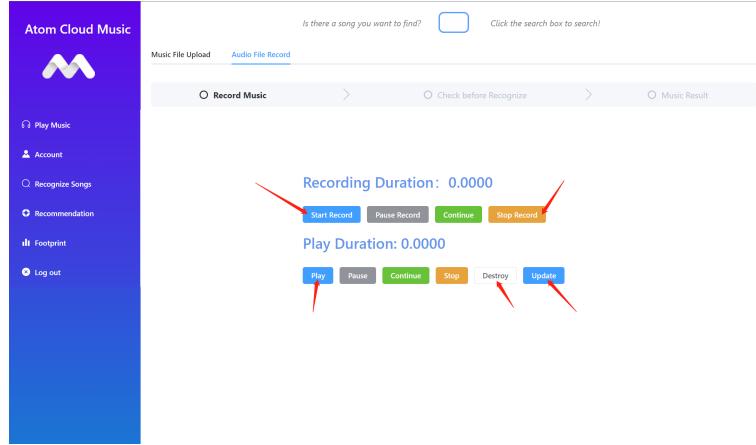
5. Set the sound source for the first drop-down menu in Settings to the Stereo Mix that you just set



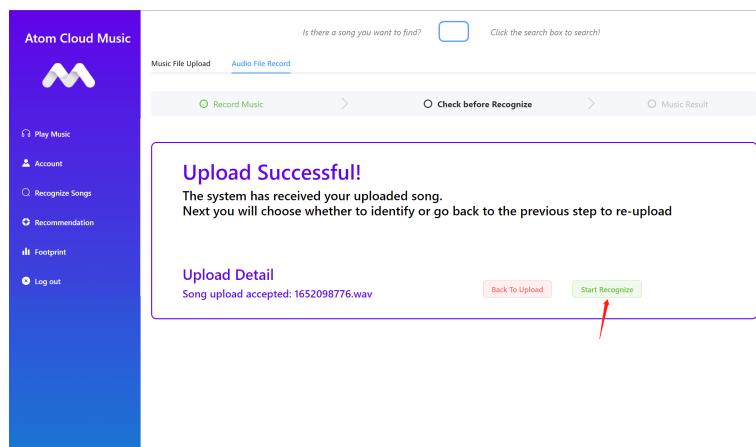
After completing the above steps, enter the song recognition interface and click the "Audio File Record" button as shown in the red arrow:



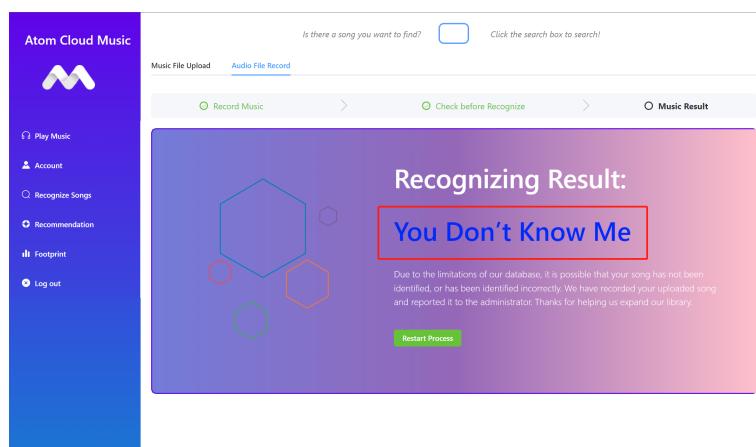
On the recording interface, the "Start Record" button is used to start recording audio, and the "Stop Record" button is used to stop recording audio. After the audio recording is complete, users can click the "Play" button on the bottom row to play the recorded audio. The "Destroy" button is used to destroy the audio and re-record it. After confirming that the recorded audio is available, click the "Update" button at the end to start uploading.



Similarly, after the upload operation is completed, the system will return the upload result and click the "Recognize" button indicated by the red arrow to start song recognition.



After waiting for system recognition, the result page can be displayed.



## 2.7 Music Recommendation

The music recommendation feature enables users to discover similar songs based on the inherent features, i.e., the frequencies of songs. So the reviews of users are not required.

First, users should upload the song, this step is same as the above music recognition function.

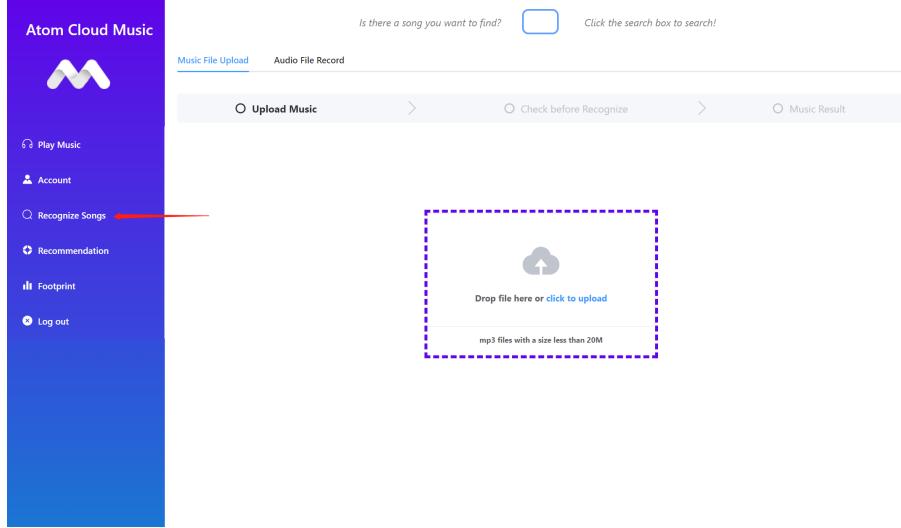


Figure 25: The recommend page

Second, you need to click confirm button before performing the recommendation. It will take some time to process songs and calculate similarity, and please wait patiently. Then, the system will return the list of similar songs.

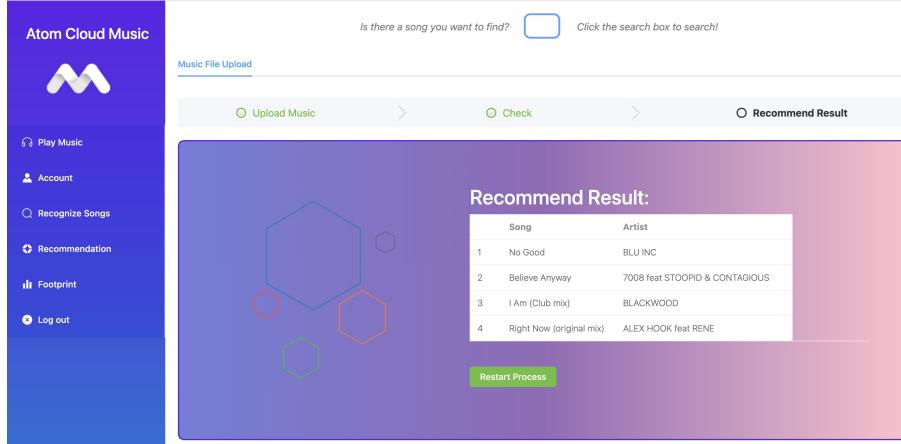


Figure 26: The recommend result

**Note:** you have to confirm that your audio file is in pure MP3 format while using the recommendation function. Some bugs may happen if you use another format or a mixture of different audio file formats. For instance, the mixture of MP3 and WAV format is unavailable.

We also provide a small test set that conforms to size limitations and format requirements to ease your testing. The link is as follows: <https://drive.google.com/drive/folders/1mlQ5hT992MhujNWW2Tb0xw-qDbPWZ5Xm?usp=sharing>

## 2.8 Footprint

The user can generate and visualize the basic usage information to a straight and clear way, by clicking the "Footprint" button in the left bar (being pointed by red pointer in the picture below). All the charts and graphs are shown in the right part[27]. The display data involves the connection and data exchange with the music

server. Therefore, the display speed may be slow. Wait for about 20 seconds. If the pie chart is incomplete or the bar chart cannot be displayed, refresh the page.

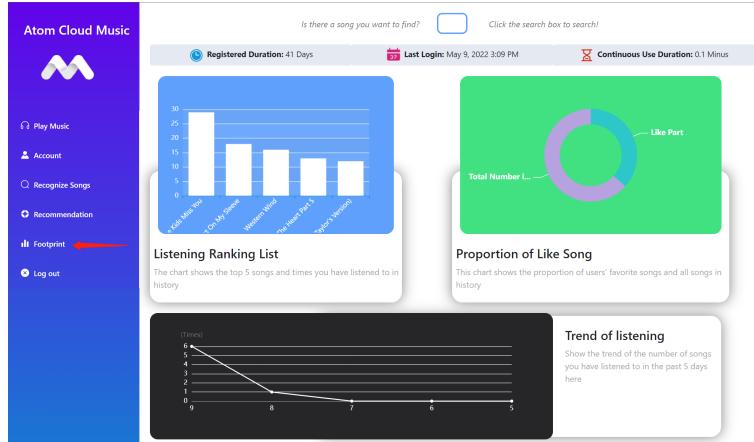


Figure 27: The Footprint Page

## 2.9 Log Out

The user can quit the system by clicking the "Log out" button (being pointed by red pointer in the picture below)[28].

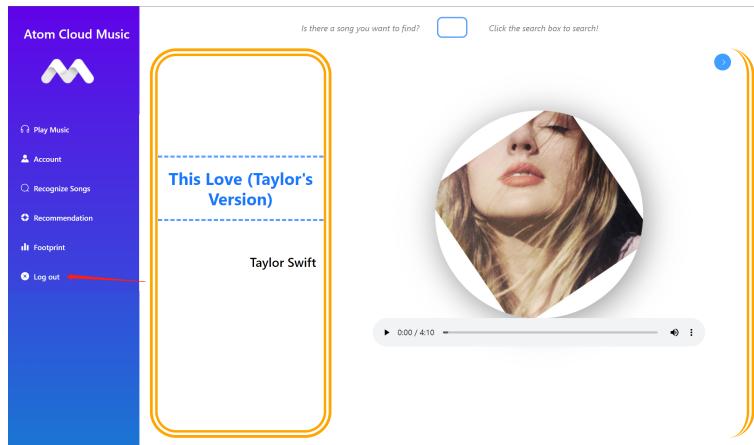


Figure 28: The "Log out" button

After clicking the exit button, the user will return to the login interface and see the logout prompt as shown below.

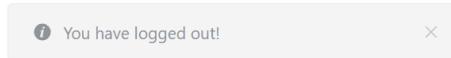


Figure 29: Log out Hint

What's more, the user needs to sign in again if there is no response for a long time to prevent the user's privacy.