



UNIVERSITY AT ALBANY

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DNA SEQUENCE VERIFY USER INTERFACE

Version 1.0 Report

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Introduction

The goal of project is that provided an interface to scientists or students who don't know coding in Python. We will design an interface which has some convenience options so that the user can operate by themselves to complete their experiments. We will utilize program language to implement this project.

This report maintains the context of project and the problems what we have solve and the future jobs. There will have 3 parts in this report. The first part introduces the problem which we need to solve it. The second part is the design in user interface. The third part is that demo the user interface.

I am pleasures to join this project and work for it.

Theory

In order to design the user interface, we need to user analysis the requirements of user so that describe it by using UML. The user requirements are below.

- (1) There are 2 type users. First is administrator, second is normal user.
- (2) User can edit its profile.
- (3) User can upload and download file in their folder.
- (4) User can add edit and delete experiments which are their own.
- (5) Administrator include all function which normal user has.
- (6) Administrator can manager all user.
- (7) Administrator can register a new user.

Based on those requirements. We have the user case diagram figure 1.

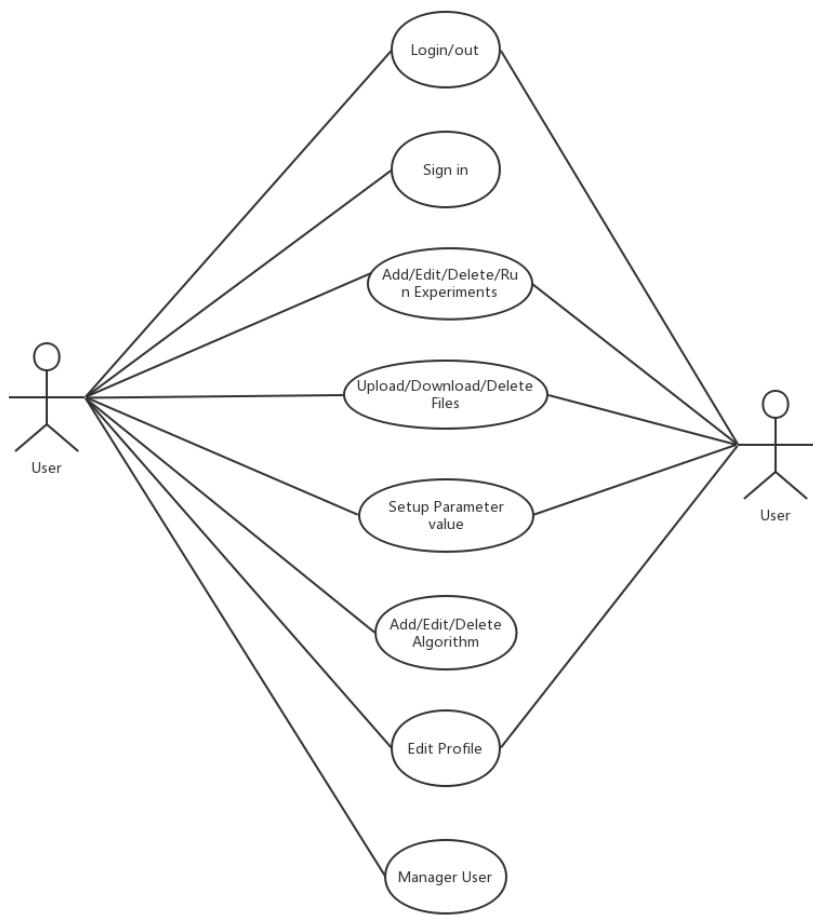


figure 1

And then we will have the Entity-Relationship diagram in figure 2.

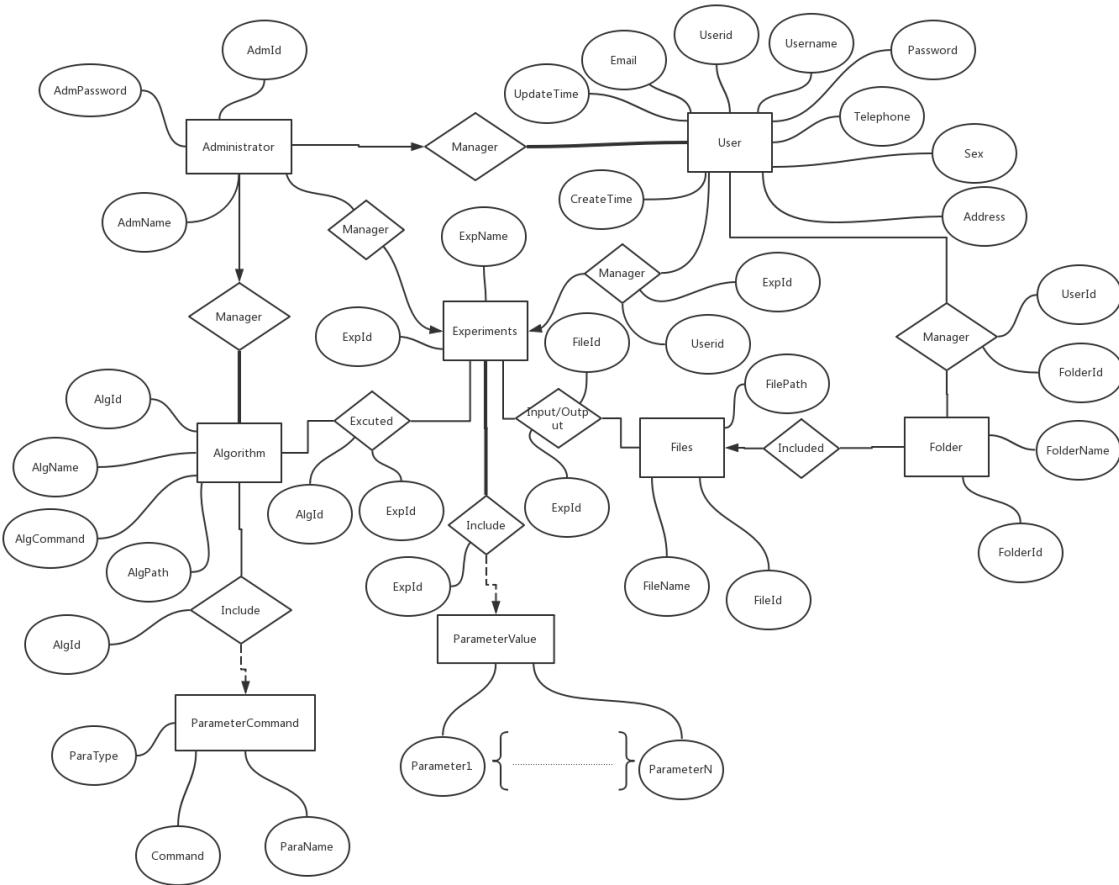


figure 2

In fact, the normal user is similar to administrator. Because the administrator has the all function the normal user have. In this diagram, we will draw the administrator entity. But we will describe it with a Boolean value. In other word, we will have user table but do not have administrator table.

User entity can manager folder entity and experiment entity. Folder include the file entity, each file has attributes which are file path, file name and file id. The file will be the input source of experiment. In other way, it could be output source of experiment. Each experiment has parameter which can be edited by the normal user. Each experiment can work in difference algorithm. Each algorithm can be show in each user. And their parameter statement can be show in the user interface.

And then the class diagram is in figure 3.

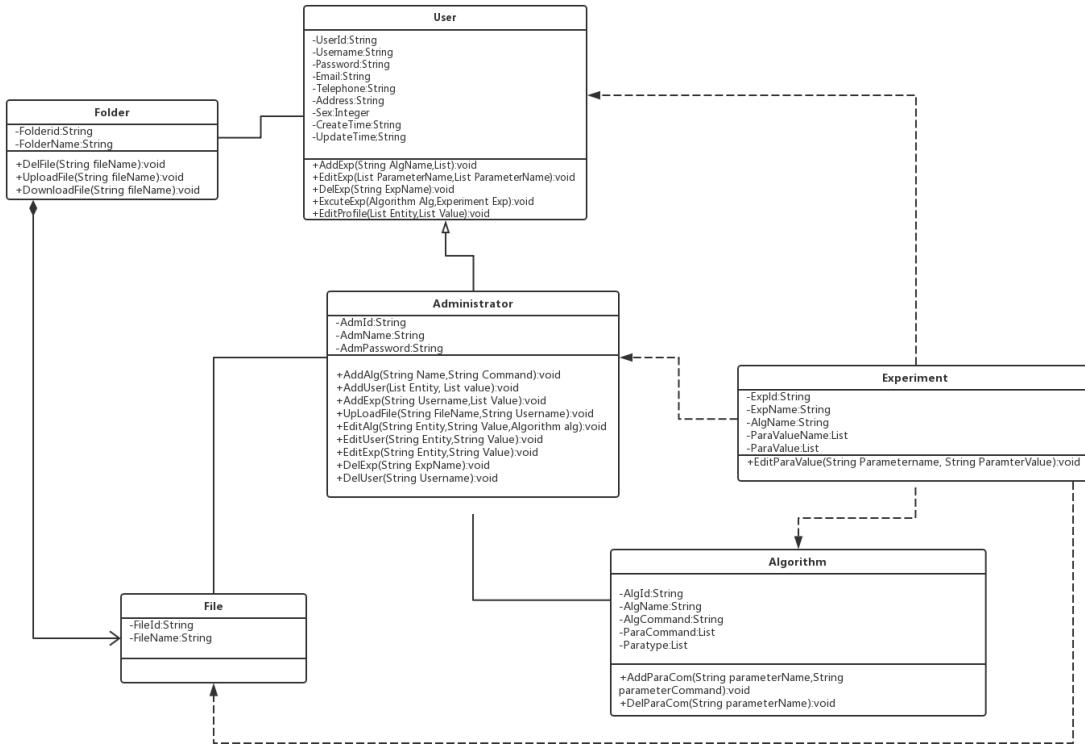


figure 3

In the above diagram, there are 6 classes. In fact, the fold class will be not added in the project. Because it is extra. The file class will be related to user class. In file class, we have those attributes file id , file name and file path. And the method includes getting attributes and setting attributes. The attributes of algorithm is same as the algorithm entity in ER diagram. The method of algorithm includes getting attributes, setting attributes , edit algorithm parameters. The attributes of experiment class also same as experiment entity in ER diagram. The method of experiment includes adding, editing and deleting experiment. The user class and administrator will be merge into user class. The attributes of user are same as the user entity in ER diagram. The method of algorithm includes getting attributes, setting attributes. If the value of attribute “isAdmin” is true, the method will have edit normal user profile and register a new user.

And then the state diagram is in figure 4.

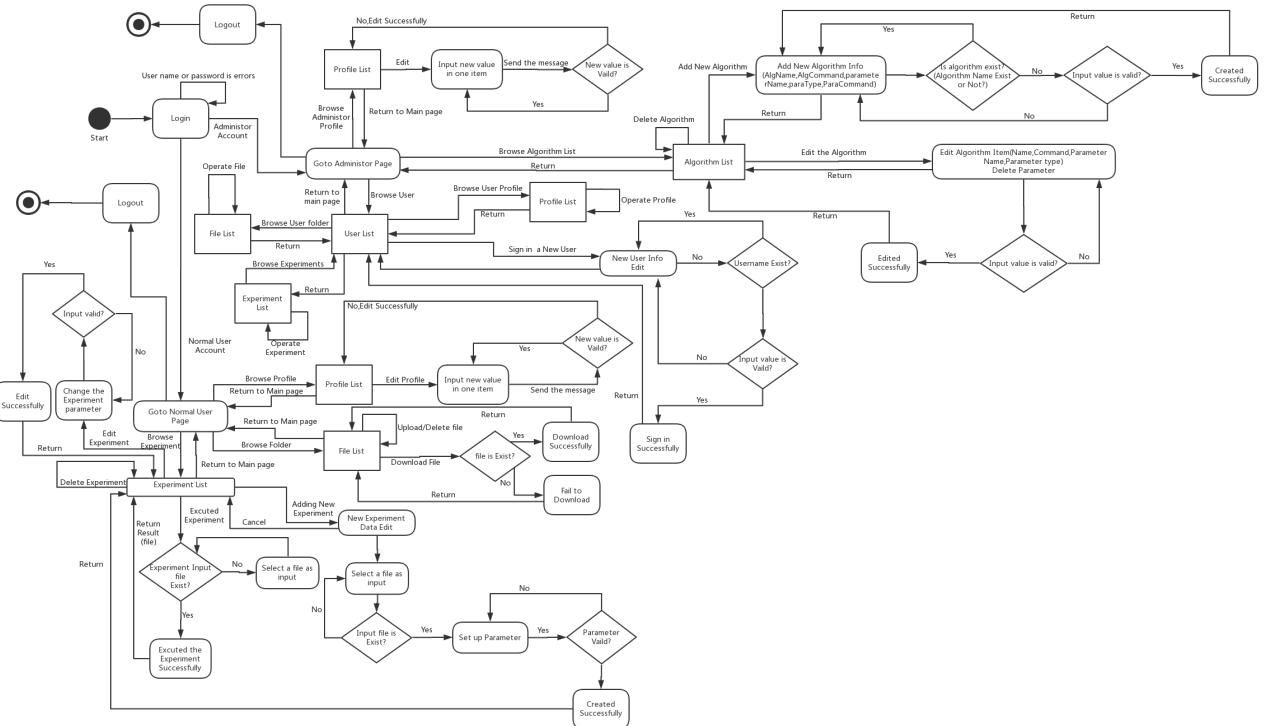


figure 4

In above diagram, there are a lot of states. The initial state is in log in page. When the user is successfully log in the user interface. The system will judge whether user is administrator or not. If no, system return user page. If yes, system return administrator page. The user can log out so that the state will go to the end state. In user page, the user can select file page, experiment page or profile page so that the system will turn to other state. The user can select their action and then system turn to current state or go back to last state.

Technique Experiment

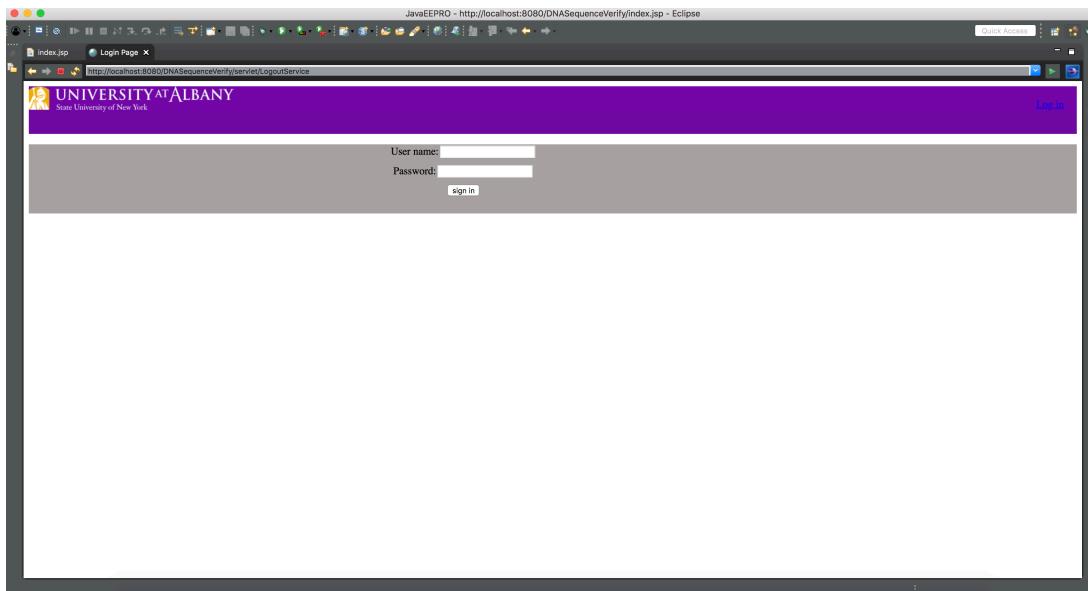
In this part, the context includes user interface demo and environment set up.

Environment Requirement

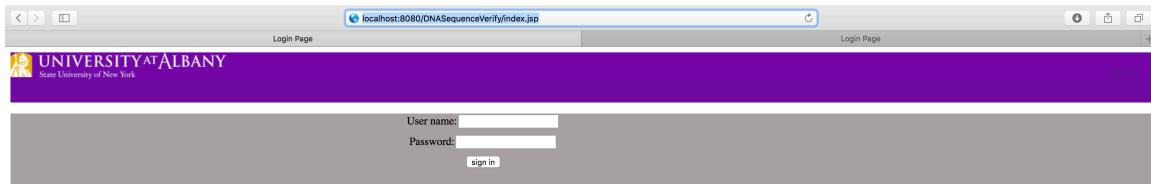
- 1.Browsers(firefox, chrome, safari and so on)
- 2.Mysql 5.6 or higher version
- 3.MySql Workbench latest version
- 4.Operation System: Mac OS
- 5.IDE:Eclipse and so on
- 6.Tomcat 7.0 or higher version
- 7.JDK 1.8 or higher version
- 8.Mysql connector-java version 5.1 or higher

User interface demo

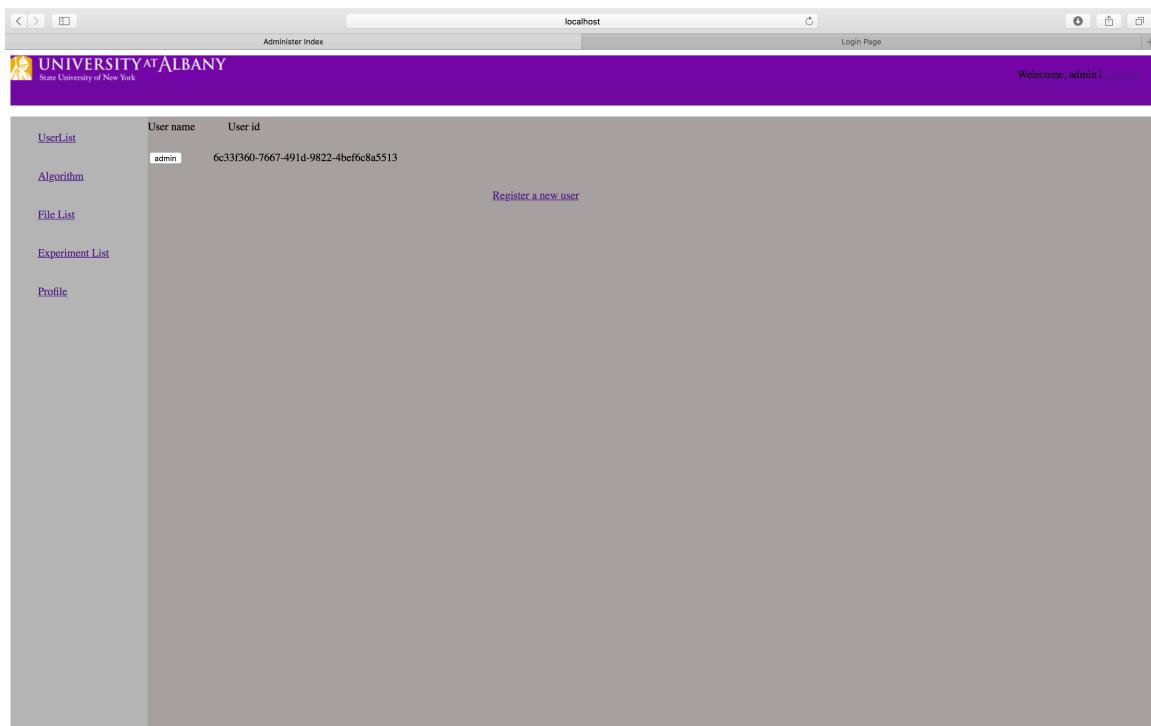
1. Start the project in local ide.



2. Open <http://localhost:8080/DNASequenceVerify/index.jsp> in browser.

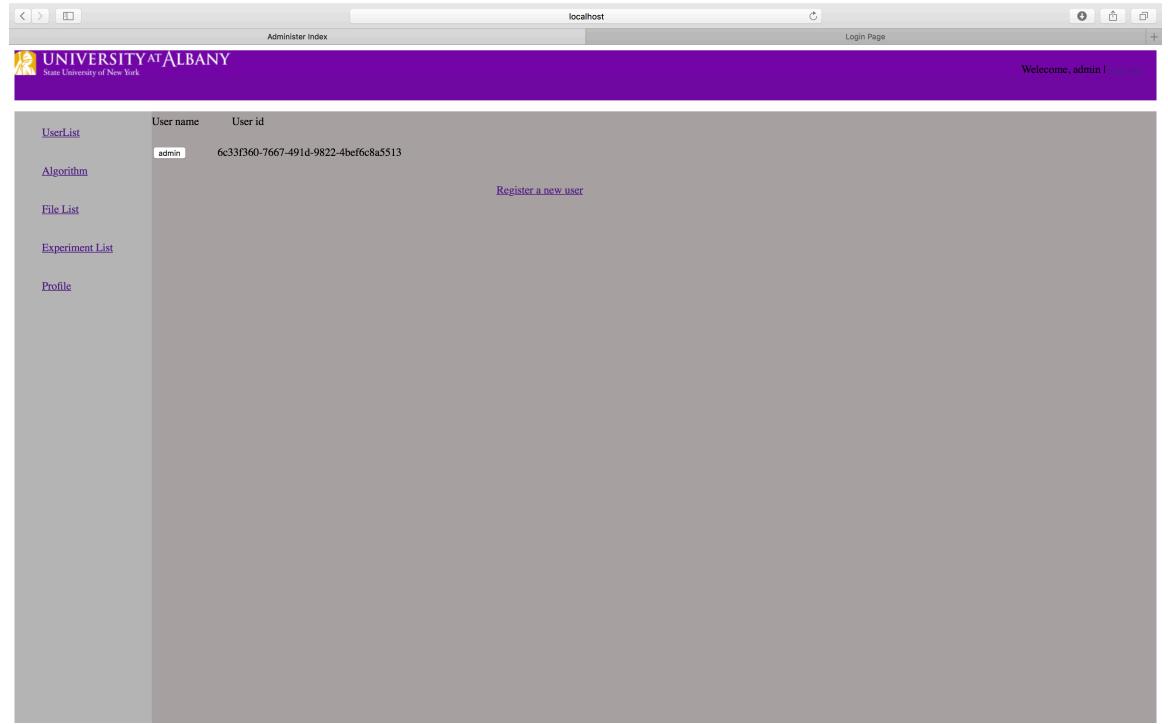


3. login in to the system.

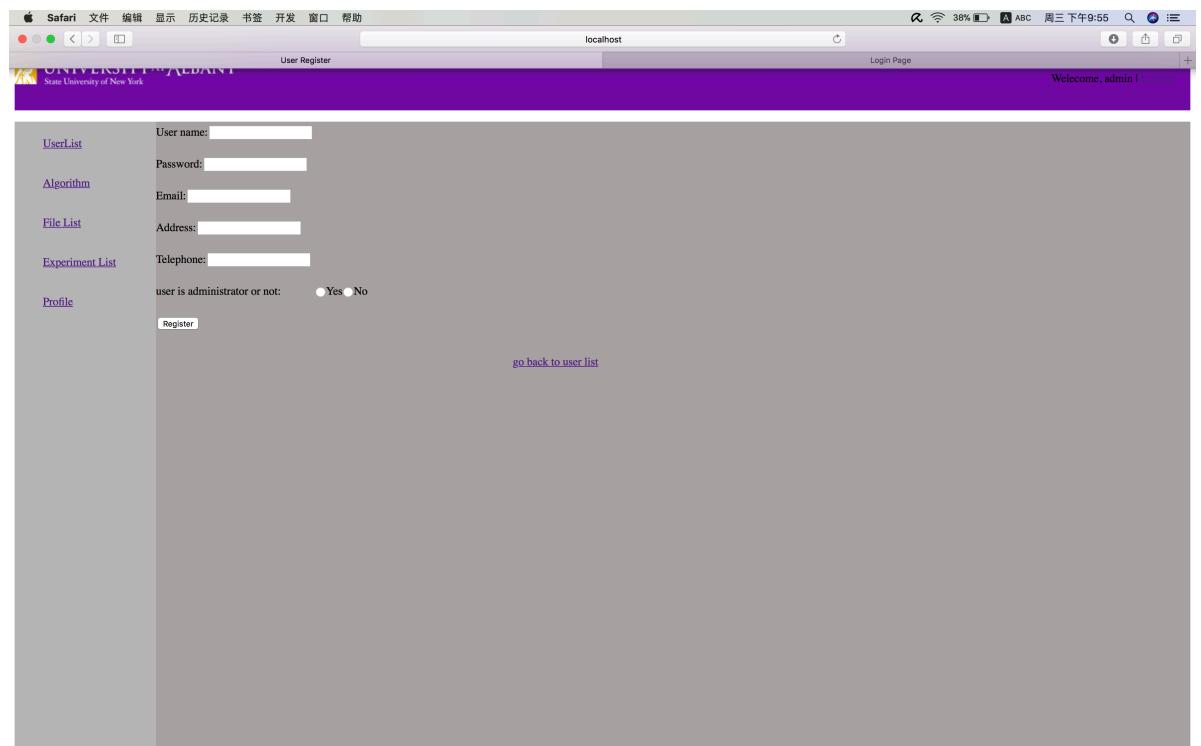


(A) Register new user

1. Click user list



2. Click register new user and confirm the new user information.



3. Click register

The screenshot shows a web browser window titled "Administrator Index" with the URL "localhost". The header includes the University at Albany logo and the text "Welcome, admin! [Logout]". On the left, there is a sidebar with links: "UserList", "Algorithm", "File List", "Experiment List", and "Profile". The main content area displays a table with two rows:

User name	User id
admin	6c33f360-7667-491d-9822-4bef6c8a5513
Micheal	1d121540-925b-406c-895e-3803498579dc

A link "Register a new user" is visible in the top right of the content area.

(B) Edit the profile

1. Click profile

The screenshot shows a web browser window titled "Profile" with the URL "localhost". The header includes the University at Albany logo and the text "Welcome, admin! [Logout]". On the left, there is a sidebar with links: "UserList", "Algorithm", "File List", "Experiment List", and "Profile". The main content area displays a form for editing a user's profile:

User id:	6c33f360-7667-491d-9822-4bef6c8a5513
User name:	<input type="text" value="admin"/>
Password:	<input type="password" value="123"/>
Email:	<input type="text" value="hello123@163.com"/>
Telephone:	<input type="text" value="51859523452123"/>
Address:	<input type="text" value="1400 hello street apt"/>

At the bottom of the form is a button labeled "Update".

2. Confirm the personal information and click update

A screenshot of a web browser window titled "localhost". The page header includes the University at Albany logo and the text "Welcome, admin | Logout". On the left, there is a sidebar with links: "UserList", "Algorithm", "File List", "Experiment List", and "Profile". The main content area displays a user profile with the following fields:

User id:	6c33f360-7667-491d-9822-4bef6c8a5513
User name:	admin
Password:	123
Email:	hello123@163.com
Telephone:	5185952345
Address:	1400 hello street apt

At the bottom right of the profile section is a blue "Update" button.

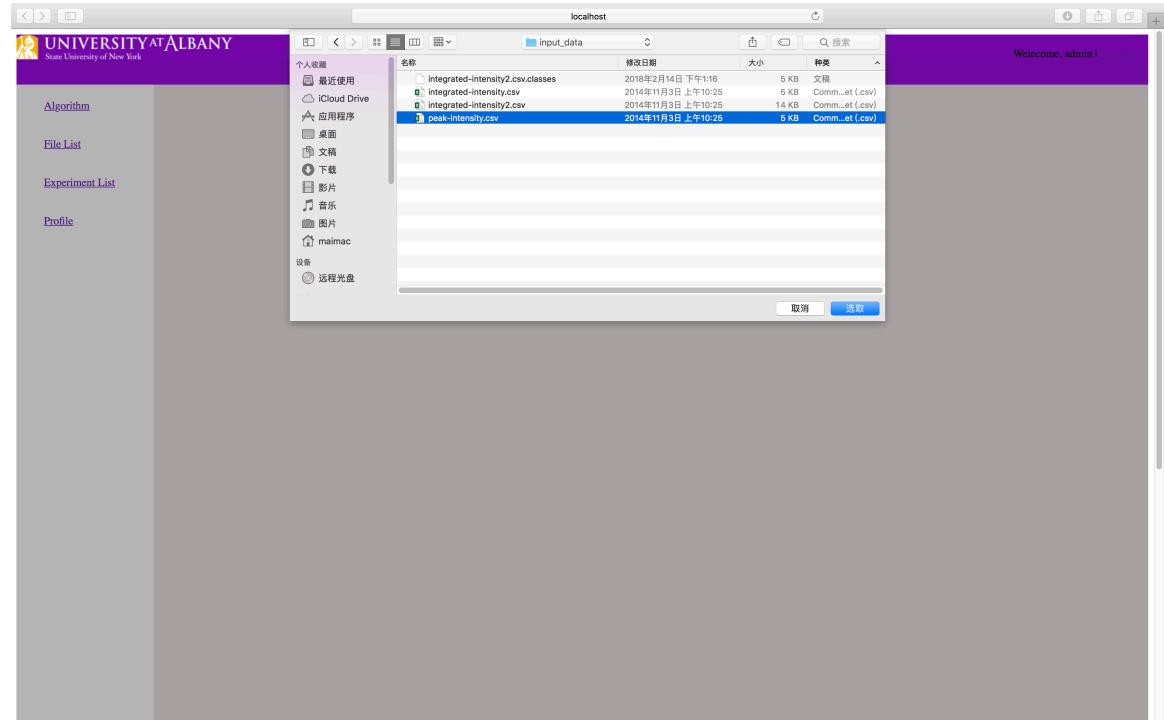
(C) Upload file

1. Click file list.

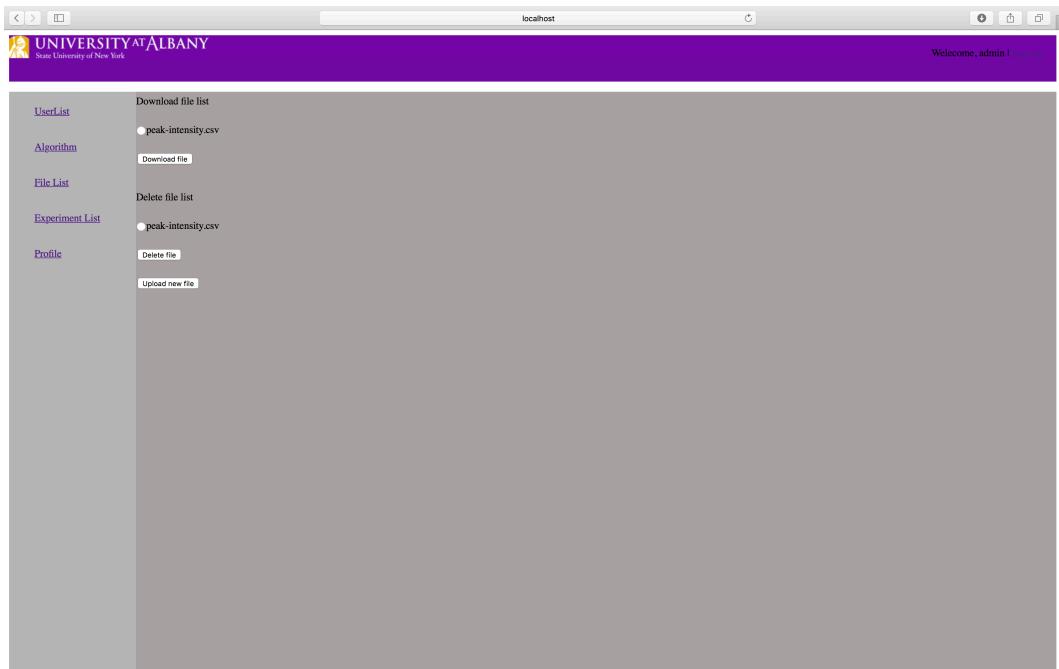
A screenshot of a web browser window titled "localhost". The page header includes the University at Albany logo and the text "Welcome, admin | Logout". On the left, there is a sidebar with links: "UserList", "Algorithm", "File List", "Experiment List", and "Profile". The main content area displays a file management interface with the following sections:

- Download file list**: Contains a single button: "Download file".
- Delete file list**: Contains a single button: "Delete file".
- Upload new file**: Contains a single button: "Upload new file".

2. Click upload new file and then select the file which will be uploaded to system and click upload

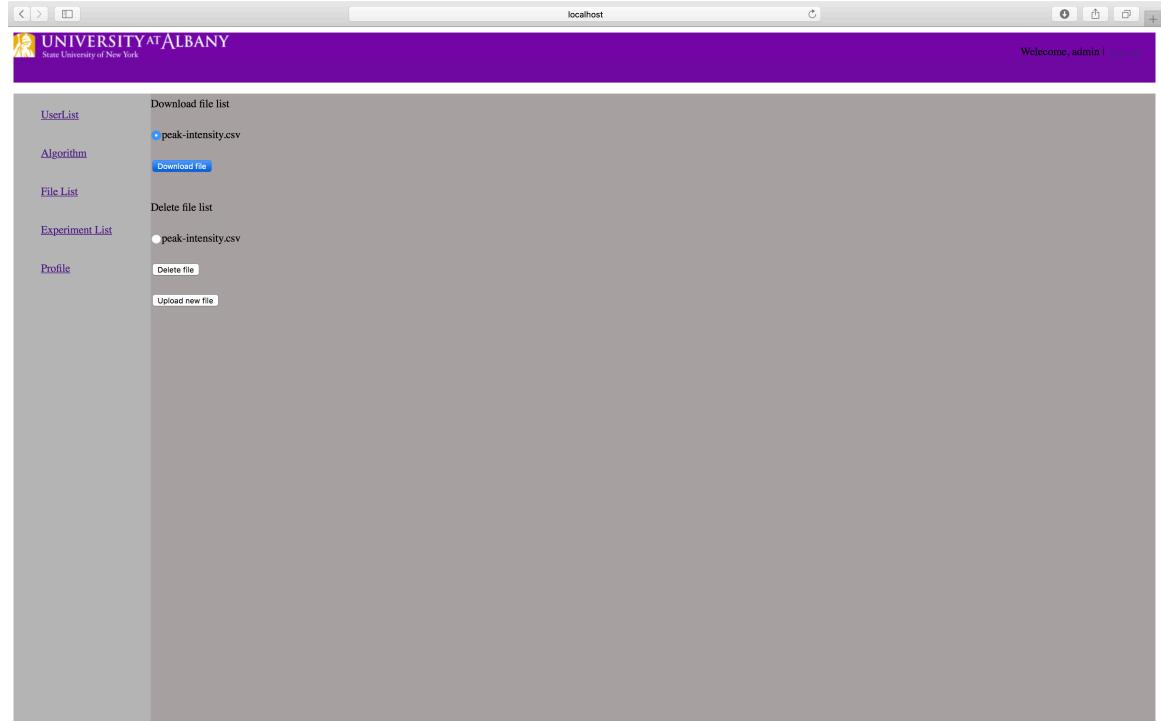


3.

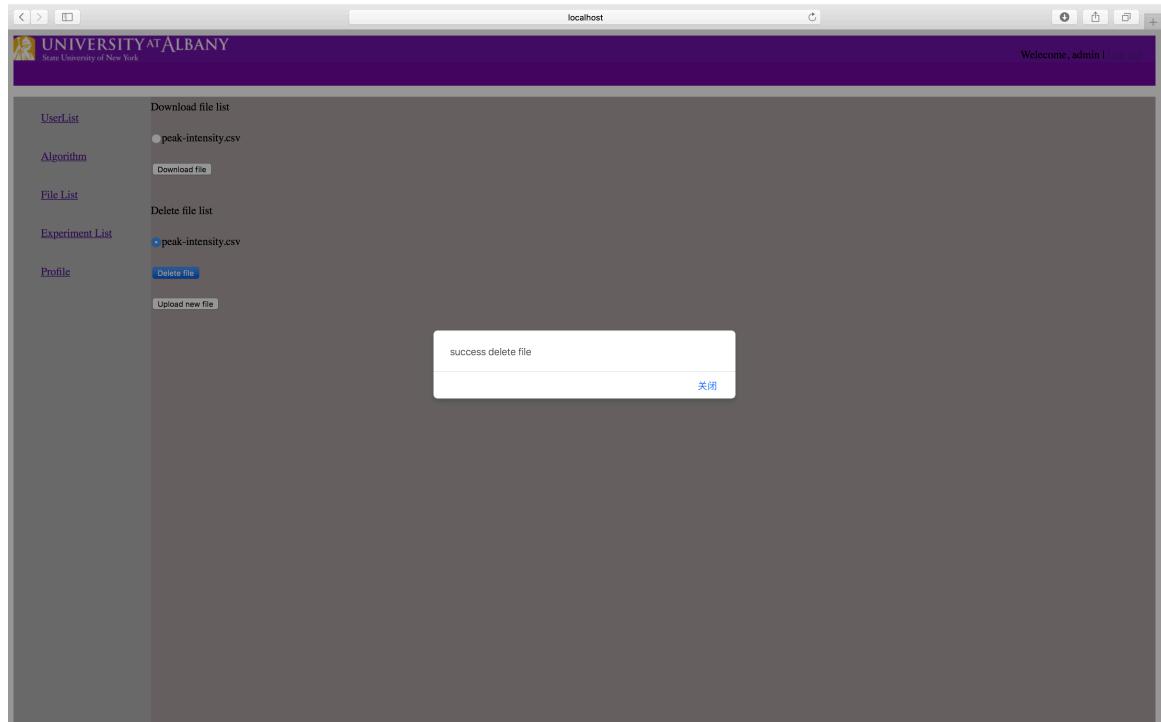


(D) Download and delete file

1. Select file and click download button.

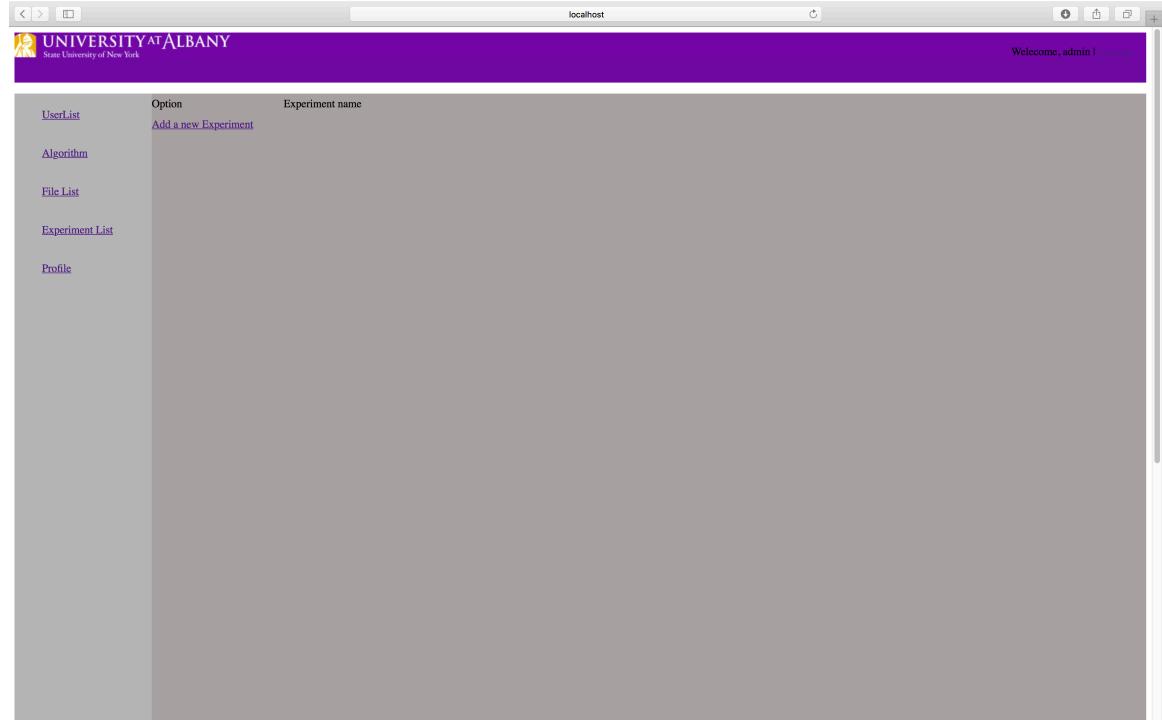


2. Select file and click delete button.

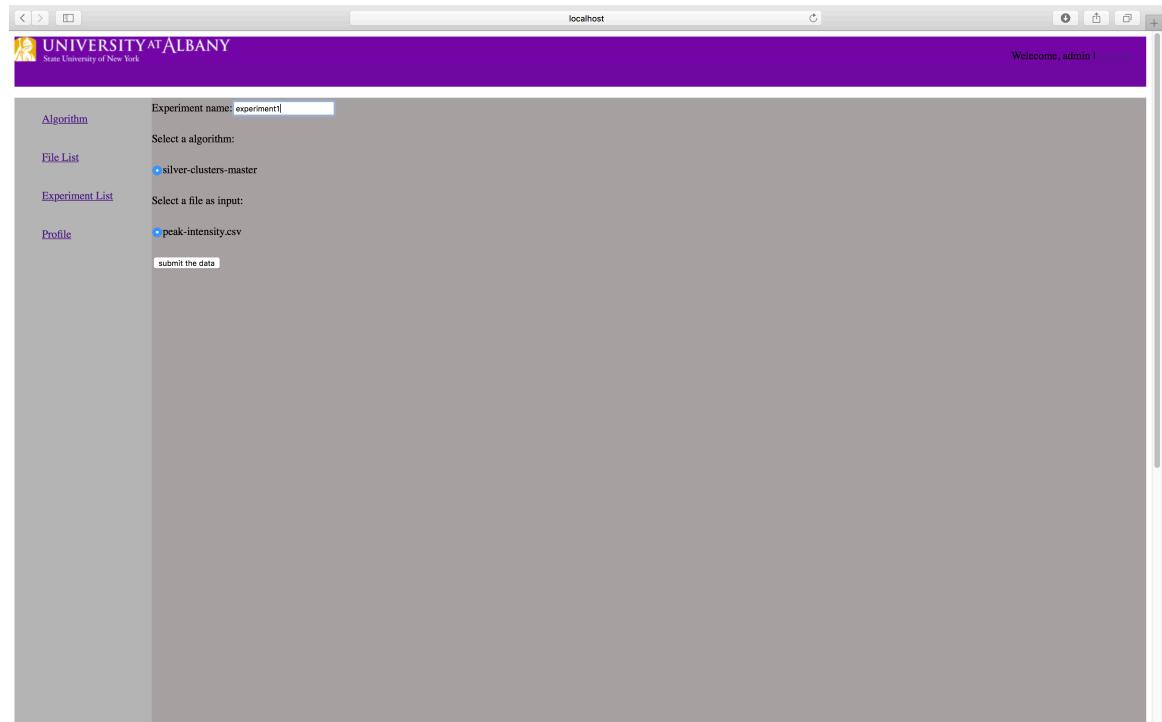


(E) Create new experiment

1. Click experiment list and then click add a new experiment



2. Confirm the experiment information (algorithm, input file and experiment name) and click submit the data.



(F) Edit and delete experiment

1. Click ‘delete’ button to delete experiment
2. Click ‘edit’ button to edit experiment

The screenshot shows a web-based application interface for editing an experiment. The top navigation bar includes links for User List, Algorithm, File List, Experiment List, and Profile. The main content area is titled 'Experiment name: experiment'. It contains the following fields:

- Input File name: peak-intensity.csv
- Algorithm name: silver-clusters-master*
- Parameter name Parameter value
 - thresholdlowvalue:
 - crossvalidationtest: Yes No
 - thresholdhigh: Yes No
 - thresholdhighvalue:
 - generatenewfeatures: Yes No
 - thresholdlow: Yes No
 - verbose: Yes No

At the bottom of the form are two buttons: 'Update The Experiment' and 'Go back to experiment list'.

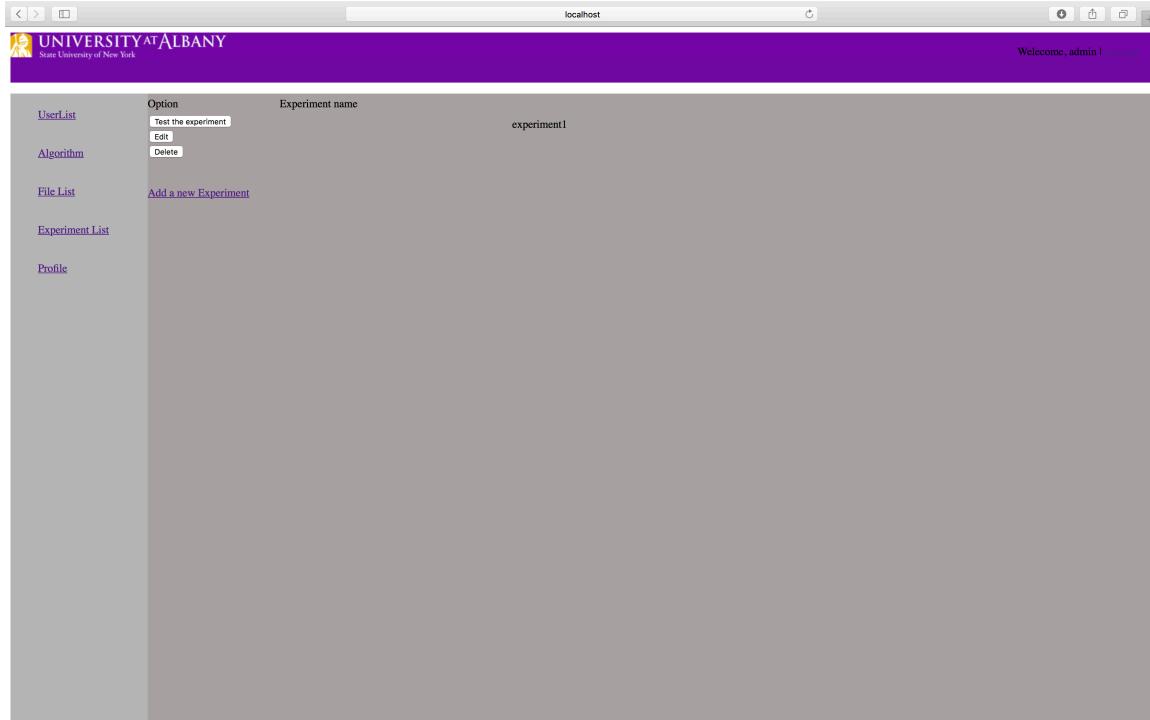
3. Click ‘update the experiment’ button to confirm the information.

Tip: When the experiment need the threshold value , Selecting the ‘thresholdhigh’ item is ‘yes’ and filling out the threshold value text.

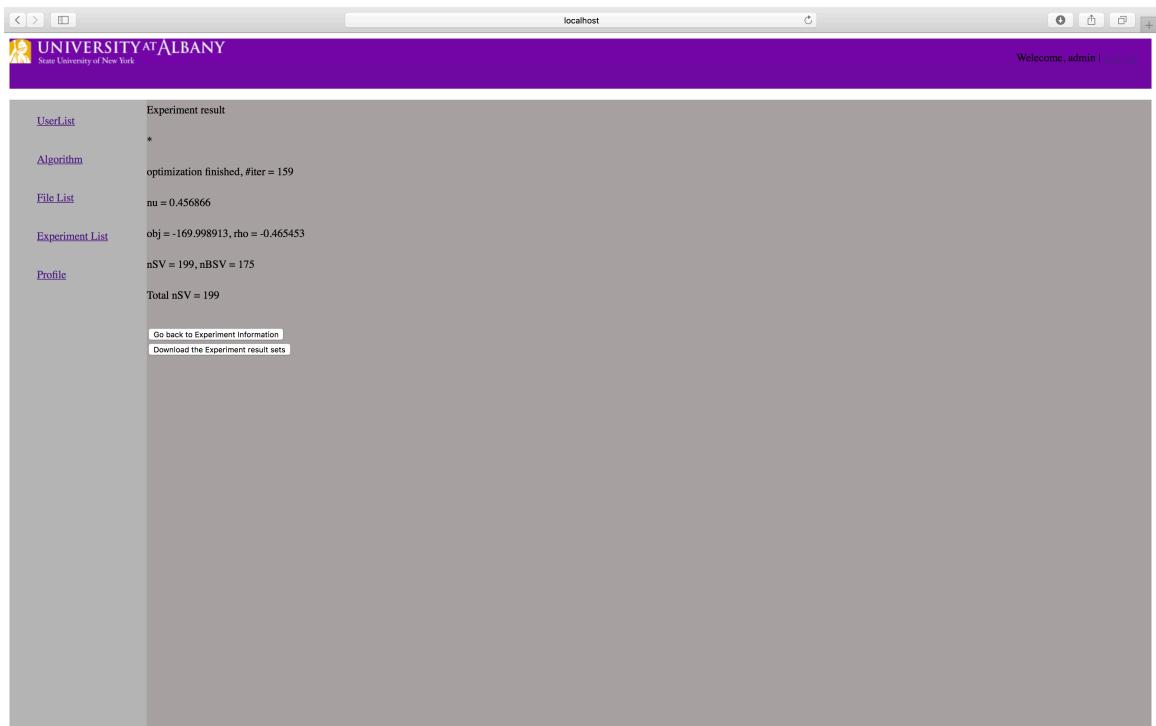
This screenshot shows the same 'Edit Experiment' page as the previous one, but with a different value in the 'thresholdhighvalue' field. The field now contains the text '6.70E+04'. All other fields and the overall layout remain the same as in the first screenshot.

(E)Test the experiment.

1.Click the ‘Test the experiment button’



2.Click ‘Download the Experiment result sets ’ button to download the result file.



Conclusion

In this system, we have provided a user interface who lack of knowledge in coding.

This system is initial version. We will improve its performance in later version.

In later version, the system will allow testing experiment with difference parameter in same time. It will execute parallel. The question is how to manage the thread. And then, the delete file list and download file list will be merge to one list with difference button.