

Fall

2015

Project 2 Service-Oriented Scientific Collaboration Social Network

--Zetwork

Technical Report

Service Oriented Computing
(18-655)

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1. Introduction

In this project, we have been introduced to a fully functional and interesting social network project. We have put in our own design in this project and achieved extra features for the web site to perfectify the user experience of our product.

In recent years, people start to spend a lot of time on social networks. The power of social media has stronger and stronger influence and impact in modern society. In social networks, people can "friend" each other or post status of individual user. All these interesting interactions between individual users makes the social network a fun place for friends and family to hang out. In another perspective, more and more business and enterprise are getting involved in the social network area, where the social network itself are used as efficiency tool for the enterprise or business.

In the background of this project, we are inspired by the idea of "Twitter within a company", to create a social network website that can be adopted in the research area, where the main users for this website are science researchers and any relative role people play in the science industry. They can share their personal profile of information in his personal main page for other users to view. If a certain user is interested in the research interest listed in the user profile, he/she can follow that researcher. Whenever a user is followed, his/her new post, which is a way for that user to share information within the social network, will be displayed on their followers page. In this sense, the social network we developed for this project is kind of like a "Twitter" but more focused on the science research theme. More content will be thoroughly discussed in the rest of the report.

This report is constructed as follows:

First, we are going to tell you the motivation behind our project. Then we are going to talk about the related work we have received to develop our project. After that, we will show you the system design of our project, including front end and back end. Follow that, the detailed system implementation will be listed. Then we are going to show you the experiments we have done for our project, which also comes the analysis for them. Then, the conclusion will be drawn for our project and future work that could be done will be discussed. Last but not the lease, a detailed tutorial will be given to walk you through our project.

2. Motivation

In this section, we are going to talk about the motivation behind this project, regarding why we are developing this project and where we are coming from.

The first thing you need to know about modern society is that we are in an information explosion time in history. We are surrounded by information we might or we might care for. One of the major success stories about social network component is Microblogging. Microblogging is a broadcast medium that exists in the form of blogging. A microblog differs from a traditional blog in that its content is typically smaller in both actual and aggregated file size. Microblogs allow users to exchange small elements of content such as short sentences and image or video media, which may be the major reason for their popularity. These small messages are sometimes called microposts.

In the industry of scientific research, we think microblogging has its own natural advantages, for instance, science researchers are always devoted to their work and sometimes they take down of little notes of their discovery here and there, in a hurry with little notes, but later found them missing. What if we can create a social network website, so that the researcher can take down the notes and record it in his/her own repository. What is even better is that if he/she decided to share this piece of information or discovery, he/she can change the status of little piece of information from private to public, so that the followers of this user can view this note, which is the micropost in our case.

Strongly motivated by this interesting and inspiring idea, we developed a social network website mainly for science researchers, where they can share private or public posts, follow or unfollow fellow researchers, view posts of his/her own or of others, edit personal information to connect with fellow researchers with common research interest. We call this comprehensive social network the "ZETWORK"! In our vision, ZETWORK can be a popular hit product in the science research industry. It will win peoples' hearts with its delicate UI design and professional functionality and services provided for users. People in the industry will be gushing about this website and all signed up for our service.

3. Related Work

Our project is based on the apache project. We added our own design of the project onto the existed climate project provided to us. In general, in order to add new functions, we managed to add code to both the frontend and backend, which will be discussed as follows:

Apache_CMDA_Frontend

Under app/views: we wrote several web pages files in scala, referencing the example from the climateServices.scala.html file. We developed structure to retrieve data: for our social network service from backend.

Under models.metadata: we wrote our models to implemet for this project: e.g., Post.java, Follower.java, Comment.java, which will call backend APIs: for example, APICall.callAPI(GET_CLIMATESERVICES_ALL). Note that the model, User.java, is based on the original project, which has already been thoroughly written and fully functioned in multiple aspects of the User model's needs.

For controllers, we have writen a few controllers corresponding to the models in our project, e.g., PostController.java - Result postServices(postServiceForm).

In addition, some utility files worth mentioning are APICall.java under Util package and Constants.java also under Util package where we define final static constants such as backend port (e.g., NEW_API_URL = 9033).

Apache_CMDA_Backend

Under models: we have written the models code, e.g., Post.java, Follower.java, Comment.java models for our backend to implement data tranfer and storage. Also, we have modified the User.java model that was already there in the origianl models and adopted most of the functionality that was already writen there to call database-wise services.

ClimateServiceRepository.java is a very good example for us to learn about the design in backend. In here, we define SQL call to MySQL through Hibernet.

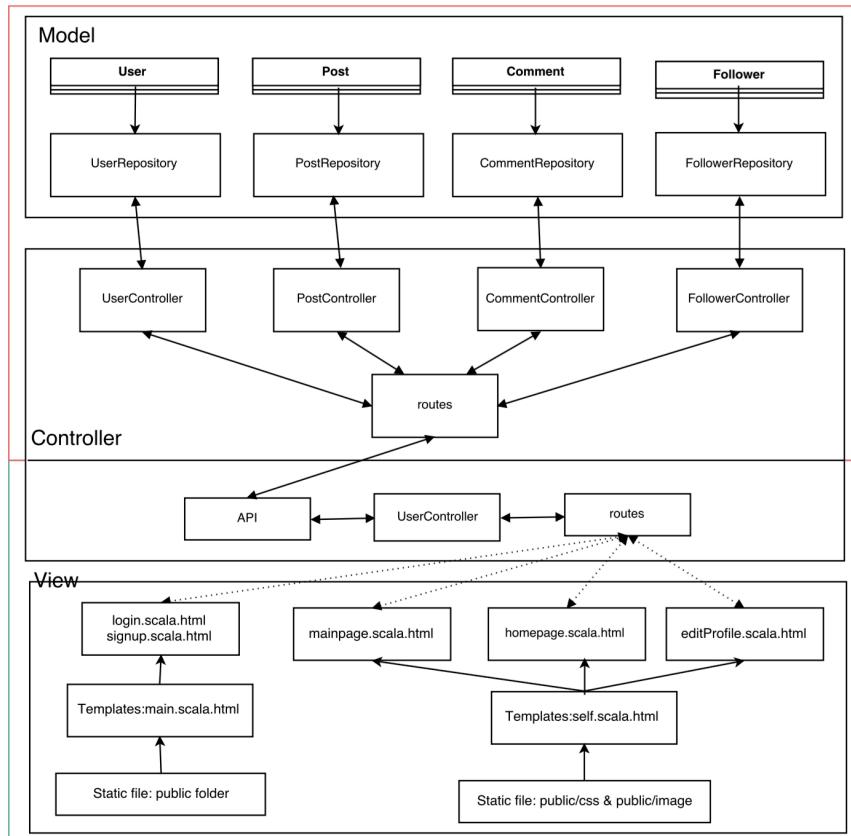
SQL call CrudRespository under controllers. Like in frontend, we have implemented most of functionality by writing methods in controller java file, e.g., PostController, UserController, UserController and FollowerController, where the methods will connect to database e.g., UserController.addUser().

Under conf/META-INF/persistence.xml, we configure hibernate connection and mysql connection. Last but not the least, in "Routes" file, we define all API calls opened to Frontend.

The overall project framework is based on the apache project. More detailed system design will be discussed in the next section.

4. System Design

First we are going to give an overview of the system design of our project. Then we will introduce the front end and back end system design respectively. After that, brief introduction of our database schema will be presented.



Front end

The project is designed based on the MVC architectural pattern, to be more specific, this pattern splits the application into separate layers: the Presentation layer and the Model layer. The Presentation layer is further split into a View and a Controller layer. We divided the application into two parts, the front end and backend, which mean the front end is the presentation layer.

As for the View, at the first place, we design user interface using Play Scala template, which a simple text file that contains small blocks of Scala code and can generate any text-based format, such as HTML, XML. In order to make the UI user friendly and adjust to multiple screen resolution, we implemented Twitter Bootstrap framework. All of the related static file, including images, CSS and Bootstrap source code and etc., are placed in “public” folder and referred those static content in self.scala.html, which is a inherit template in order to reduce code replication. Basically, we create three scala.html file, mainpage.scala.html, homepage.scala.html and editProfile.scala.html to dynamically generate the model representation. (Also use the existing login.scala.html and signup.scala.html for basic login and sign up functionality.)

The core of the project is the Controller, which is a Java class where each public, static, method is an action. Using the URL in “routs” file to map the actions in Controller. In our project, the Controller is named as “UserController”, which contains “mainpage()”, “homepage()”, “addPost()”, “deletePost()”, “sharePost()”, “likePost()”, “searchUser()”, “addComment()”, “editProfile()” actions. In each action, extracts relevant data from the HTTP request and parse the data to JSON, and communicate with the backend using APICALL, then extract the data which is wrapped into response from the backend, usually in JSON format. At last, the updated data will be displayed on the View.

With regard to Model, it is the domain-specific representation of the information on which the application operates. MVC does not specifically mention the data access layer because it is understood to be underneath, or encapsulated by, the Model. In our project, the specific operation on the Model are executed in the backend with the control of UserController, PostController, CommentController and FollowerController. As for the backend, it will be introduced in detail as below.

Back end

For back end system design, there are four main models, which are User, Follower, Post and Comment. Each of them corresponds to a table in the MySQL database and has a repository and controller respectively.

At first, here are the screenshots of our design drafts of these models.

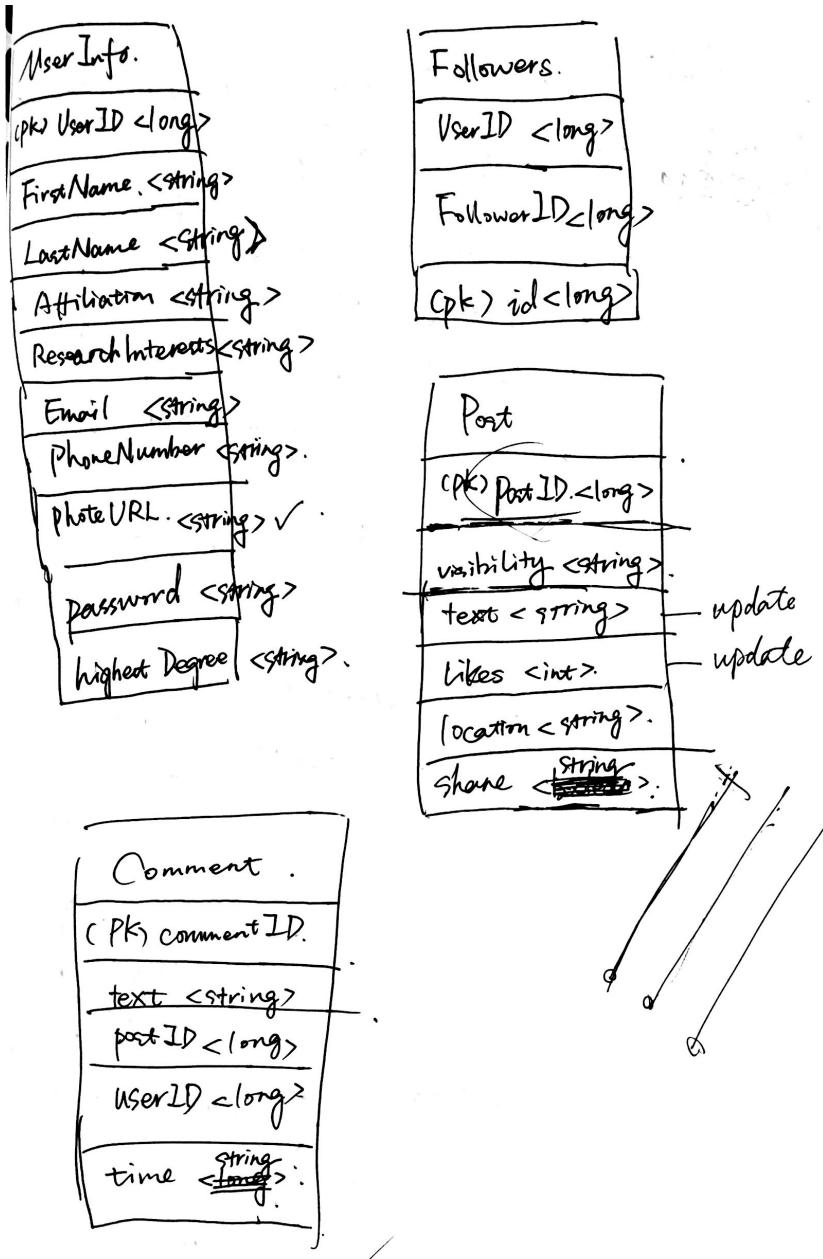


Fig. 1 Design draft of database schema

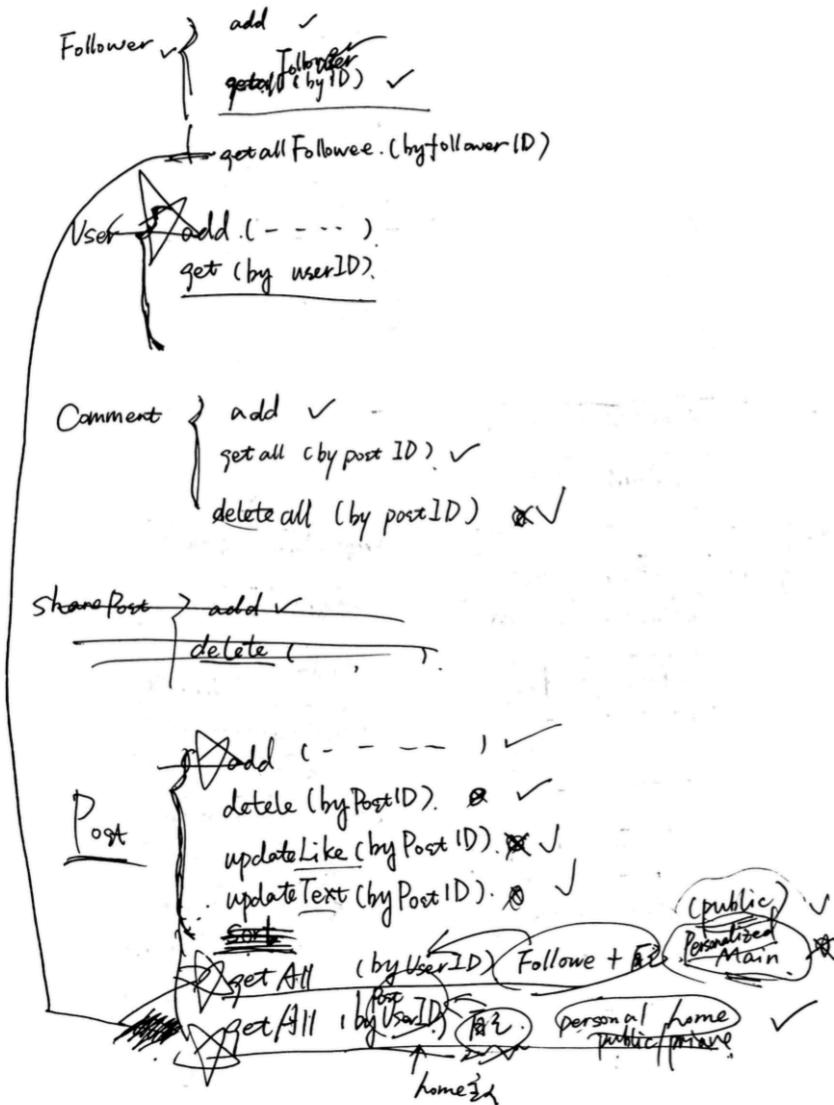


Fig. 2 Design draft of back end implementation methods

Then, here are some detail explanations and screenshots of each class.

(1) User

For user model, its primary key is the automatic generated id. It has many fields to store the user-related information such as email, password, first name, last name and so on. When there are some operations in the front end that need to check or edit user's information, such as log in, corresponding methods in User controller will be called. Here are the screenshots of User class and User controller.

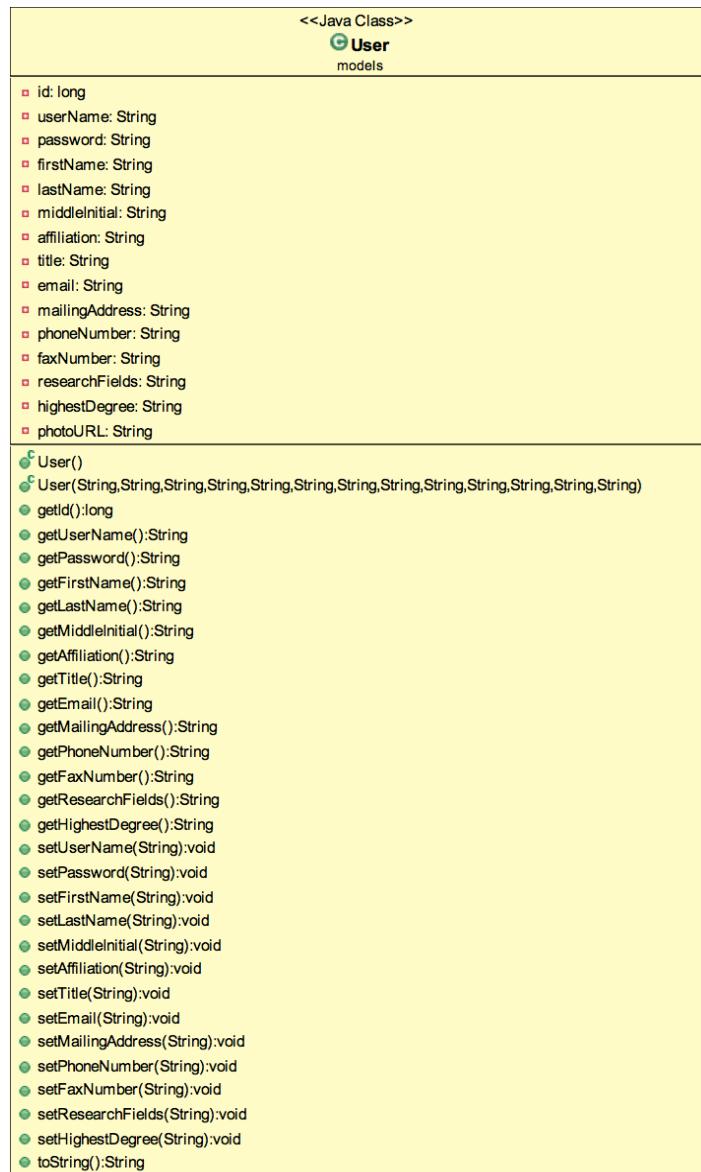


Fig. 3 User class

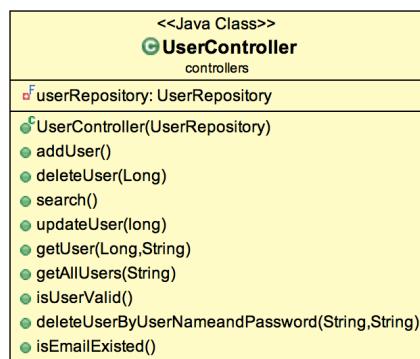


Fig. 4 User controller

(2) Follower

For follower model, it only has three fields. It uses the automatic generated id as its primary key and has another two fields, user Id and follower Id. This model is used to record all the follower and followee relationship. When there are some operations in the front end that need to check or change user's follower/followee information, such as following a new person, corresponding methods in Follower controller will be called. Besides, it relates with User model closely by using the id fields. Here are the screenshots of Follower class and Follower controller.

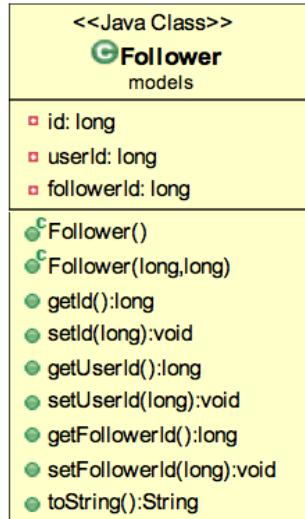


Fig. 5 Follower class

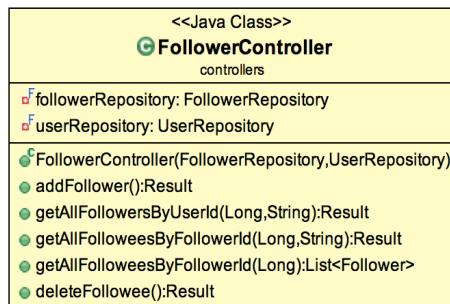


Fig. 6 Follower controller

(3) Post

As for post model, it also has an automatic generated id as its primary key. Considering all the post-related operations, like publishing public/private posts, edit/like/delete/share posts and share location, post model has ten fields altogether including id. Each of these fields is used to store post-related operation information. When there are some operations in the front end that need to change post information, such as publishing a new post, corresponding methods in Post controller will be called. Here are the screenshots of Post class and Post controller.

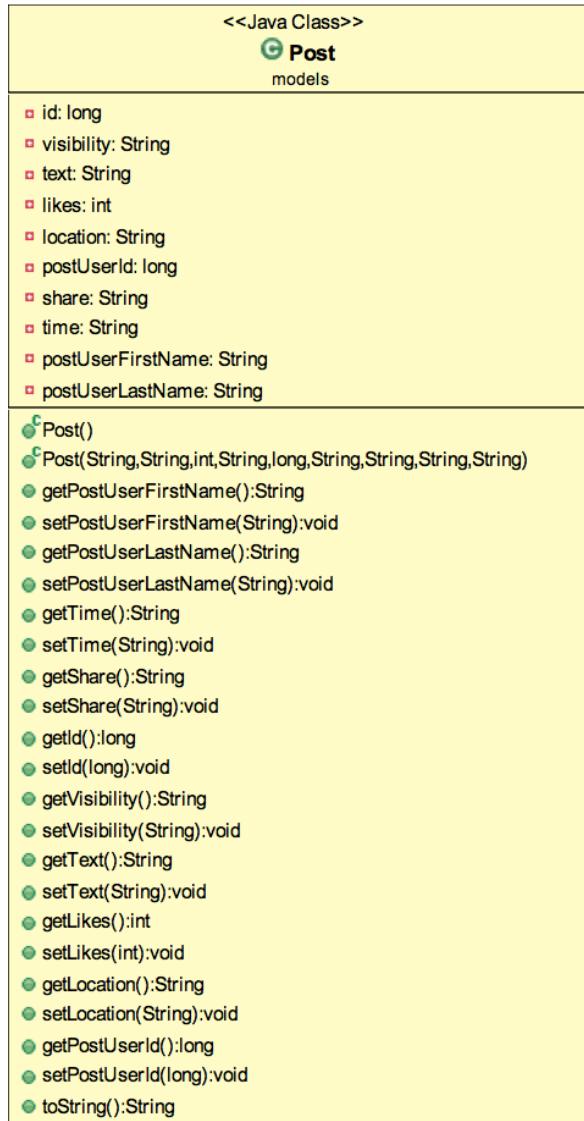


Fig. 7 Post class

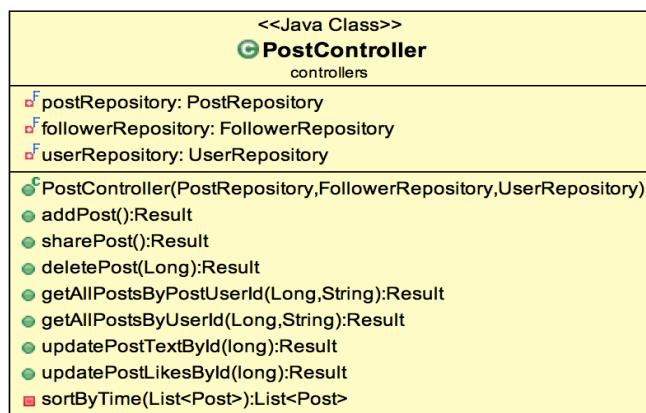


Fig. 8 Post controller

(4) Comment

At last, for comment model, like others, it sets an automatic generated id as its primary key. Except for that, it has a post Id field to recognize which post it belongs to, user information fields to specify who adds this comment and a time field to record when it is added. Comment class is related to Post class closely using the field post Id. When there are some operations in the front end that need to check or add comments, corresponding methods in Comment controller will be called. Here are the screenshots of Comment class and Comment controller.

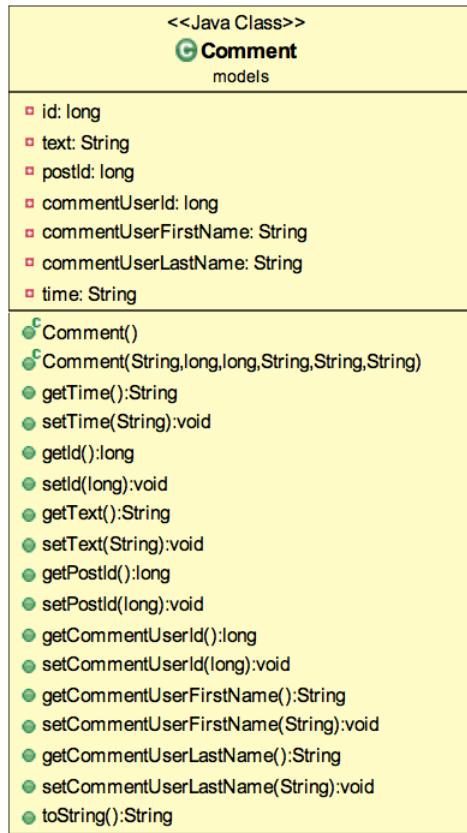


Fig. 9 Comment class

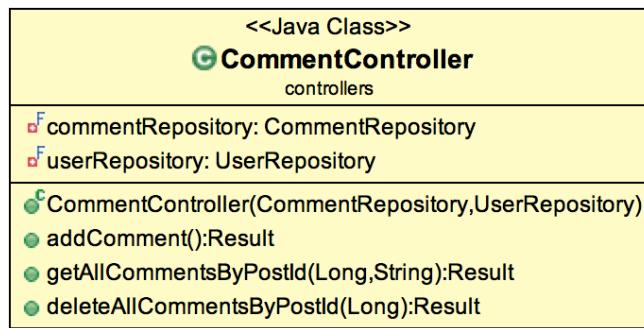


Fig. 10 Comment controller

Finally, following is the screenshot of our final database schema. From this picture, we can see the detail information of each table and the relationship between them.

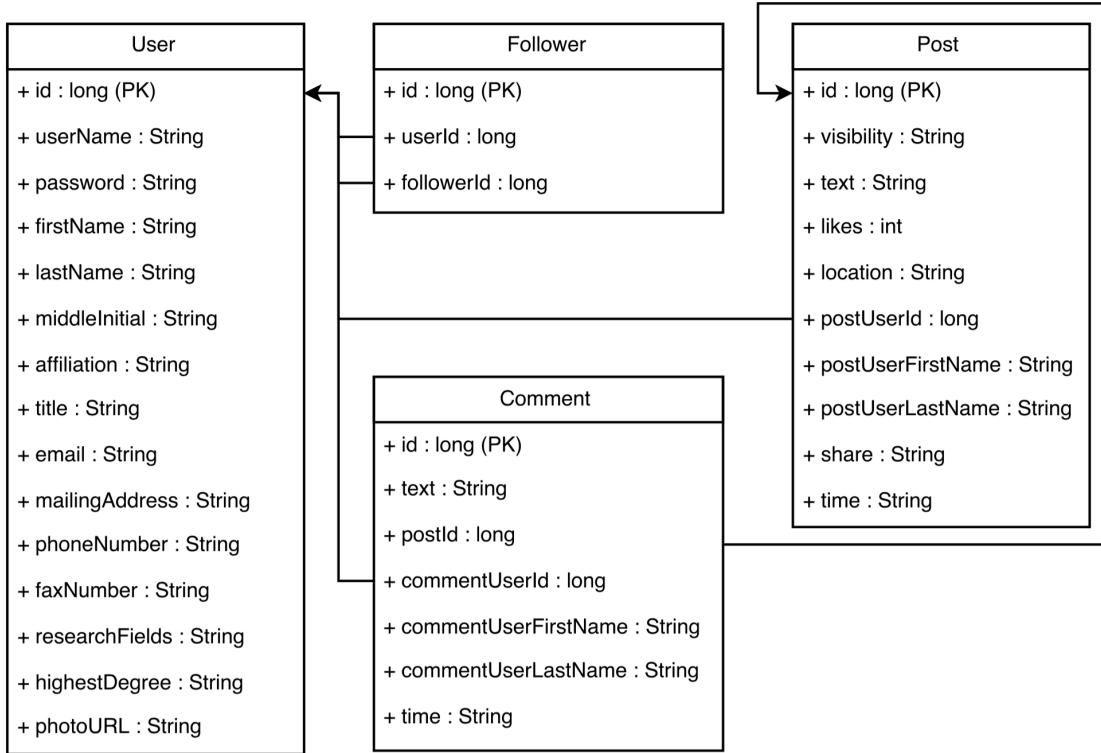


Fig. 11 Final database schema

5. System Implementation

As you have read in the previous section, we have great design for our system and now we will introduce to you the system implementation of our project.

In this section, we are going to talk about how we have implemented our project. The logic of this section is that we first going to introduce the technologies in this project we have used, one by one, both in backend and frontend. The programing languages we have used in different modules. Also we will show you the database technology we have used and implemented.

Back End



Programming language: Java

Java is one of the best programming language created ever, which has been proved it in last 20 years. Two decades is a big time for any Programming language, and Java has gained strength every passing day.

Earlier with ground-breaking changes in form of Enum, Generics, and Autoboxing in Java 5, performance improvement with Java 6, and Google's choice of language for Android apps development, keeps Java as front line programming language.

For our project, the team members in backend all have great experience in Java programming so the development period is very fluent.



Database: MySQL

MySQL is a very popular open source relational database, which is also popular choice of database for use in web applications. It is a central component of the widely used LAMP open source web application software stack (and other "AMP" stacks). LAMP is an acronym for "Linux, Apache, MySQL, Perl/PHP/Python." Free-software-open source projects that require a full-featured database management system often use MySQL.

For our project, we have used MySQL as our backend database. We have adopted the advantages of this structured relational database to store the information in our project and designed database schema for the models in our project, which has been thoroughly explained in the system design section.



Mapping Framework: Hibernate

Hibernate ORM, Hibernate in short, is an object-relational mapping framework for the Java language, providing a framework for mapping an object-oriented domain model to a traditional relational database. Hibernate solves object-relational impedance mismatch problems by replacing direct persistence-related database accesses with high-level object handling functions.

By using this mapping framework in our project, we have successfully mapped the models created in java to tables in our MySQL database schema.

Front End



Web Application Framework: Play

Play is an open source web application framework, written in Scala and Java, which follows the model-view-controller (mvc) architectural pattern. It aims to optimize developer productivity by using convention over configuration, hot code reloading and display of errors in the browser. Support for the Scala programming language has been available since version 1.1 of the

framework. In version 2.0, the framework core was rewritten in Scala. Build and deployment was migrated to SBT, and templates use Scala instead of Groovy.



Markup Language: HTML

HyperText Markup Language, commonly referred to as HTML, is the standard markup language used to create web pages. Along with CSS, and JavaScript, HTML is a cornerstone technology, used by most websites to create visually engaging webpages, user interfaces for web applications, and user interfaces for many mobile applications.[1] Web browsers can read HTML files and render them into visible or audible web pages. HTML describes the structure of a website semantically along with cues for presentation, making it a markup language, rather than a programming language.



Style sheet Language: CSS

Cascading Style Sheets (CSS) is a style sheet language used for describing the presentation of a document written in a markup language. Although most often used to set the visual style of web pages and user interfaces written in HTML and XHTML, the language can be applied to any XML document, including plain XML, SVG and XUL, and is applicable to rendering in speech, or on other media. Along with HTML and JavaScript, CSS is a cornerstone technology used by most websites to create visually engaging webpages, user interfaces for web applications, and user interfaces for many mobile applications.



Language: JavaScript

JavaScript is a high-level, dynamic and interpreted programming language. Alongside HTML and CSS, it is one of the three essential technologies of World Wide Web content production; the majority of websites employ it. It has been supported by all modern web browsers without plugins.



Framework: Bootstrap

Bootstrap is a sleek, intuitive, and powerful mobile first front-end framework for faster and easier web development.

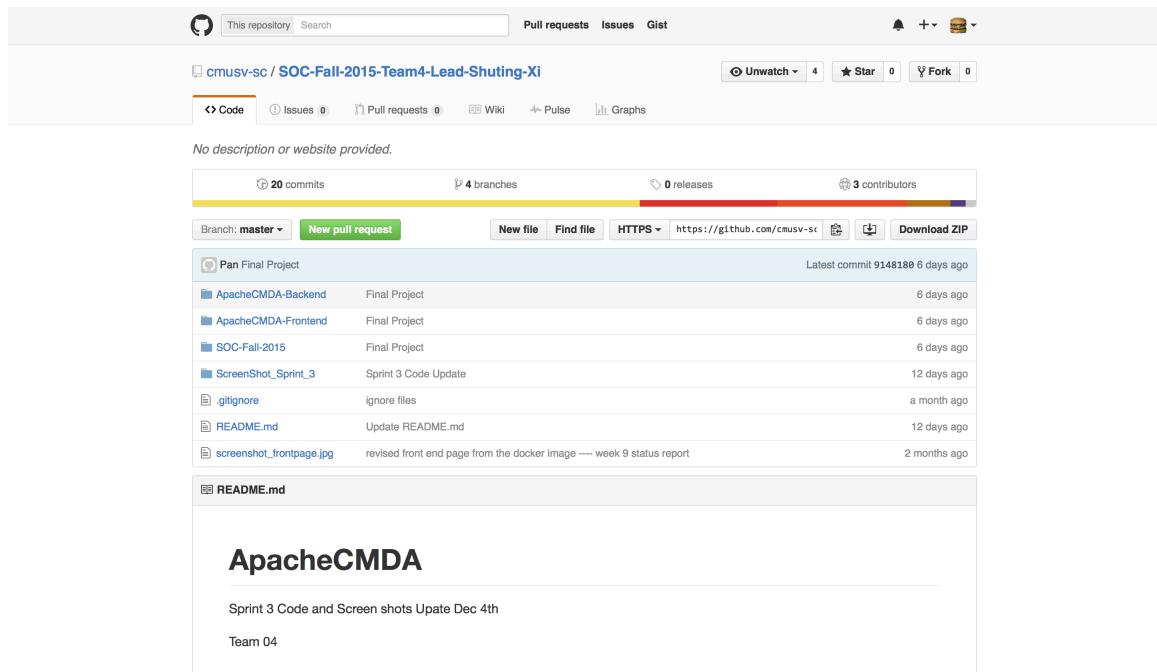
Collaboration Tools

Collaboration: GitHub

GitHub is a Web-based Git repository hosting service. It offers all of the distributed revision control and source code management (SCM) functionality of Git as well as adding its own features. Unlike Git, which is strictly a command-line tool, GitHub provides a Web-based graphical interface and desktop as well as mobile integration. It also provides access control and several collaboration features such as bug tracking, feature requests, task management, and wikis for every project. GitHub offers both plans for private repositories and free accounts, which are usually used to host open-source software projects. As of 2015, GitHub reports having over 11 million users and over 29.4 million repositories, making it the largest host of source code in the world.

During this project, we have successfully adopted the GitHub as our main codes sharing tool. In each sprint period, we committed our newest code to GitHub repository and commented properly to log the entire process of our development.

Here is a screen shot of our GitHub repository.



And another screen shot of the commitment to the GitHub repository we have done for this project.

Branch: master

- Commits on Dec 11, 2015
 - Final Project** Pan committed 6 days ago 9148180
 - Final Project** Pan committed 6 days ago 528c2c8
- Commits on Dec 4, 2015
 - Update README.md** nianzut committed 12 days ago 74cad2d
 - Sprint 3 Code Update** nianzut committed 12 days ago 50218e7
 - newest code update** nianzut committed 12 days ago 28367bf
- Commits on Dec 3, 2015
 - add sprint3 backend** Pan committed 13 days ago dcd3b35
 - finish my part of sprint3 frontend** Pan committed 13 days ago 251725b
- Commits on Nov 7, 2015
 - Merge branch 'shuting'** tinaxi committed on Nov 7 b65c84a



Collaboration Tool: DockerHub

Docker is an open-source project that automates the deployment of applications inside software containers, by providing an additional layer of abstraction and automation of operating-system-level virtualization on Linux. Docker uses resource isolation features of the Linux kernel such as cgroups and kernel namespaces to allow independent "containers" to run within a single Linux instance, avoiding the overhead of starting and maintaining virtual machines.

PUBLIC REPOSITORY
shutingxi/apacheCMDa ☆
Last pushed: a month ago

Repo Info	Tags
Short Description 18655 SOC Docker Hub Test	Docker Pull Command docker pull shutingxi/apacheCMDa
Full Description Full description is empty for this repo.	Owner shutingxi

Comments (0)
Add Comment

We use DockerHub to collaborate with each of the teammates and store the project image. Here is a screenshot of our DockerHub repository.



Collaboration Tool: Trello

Trello is a web-based project management application originally made by Fog Creek Software in 2011, that spun out to be its own company in 2014. It operates a freemium business model, as well as being cross-subsidized by other Fog Creek Software products. A basic service is provided free of charge, although a Business Class paid-for service was launched in 2013.

Here is a screen shot of our Trello board. We use trello as our main scheduler through our entire process of our development period.

The screenshot shows a Trello board titled "18655Team_ZetWork_Project2". The board has four columns:

- To-dos before Sep.27th**:
 - Setup Trello Board and provide access to all TAs
 - Download Docker images provided by TAs
- Divide Team into 2 groups**:
 - Back-end: Shuting Xi, Shuoyao Ma, Nianzu Tang
 - Front-end: Pan Li
- To-dos before Next Friday**:
 - Design db schema -- Shuoyao Ma
 - get to know play framework -- Pan Li
 - Docker Setup -- Shuting Xi, Nianzu Tang
- Group discussion**:
 - 1st group discussion -- topics including discussion about our project, coming up with all kinds of ideas and initial task division for first week, etc. (Oct 23)
 - 2nd group discussion -- topics including specific design requirements, division of work for next phase, etc. (Oct 30)
 - 3rd group discussion -- topics including details designing discussion, etc. (Nov 5)

Sprint 1:

- Github Setup -- Done!
- Docker hub Setup and push our own image -- Done!
- DB schema --
- Web front end design --
- a. Every team MUST submit a readme.txt file to the Blackboard and explain which functionality you have implemented in this sprint.
- b. Implement at least one requirement: 50 front end; 10 back end; 10 solid contributions to the requirement: 20 (not just add simple codes to the existing homepage for example) friendly user interface: 10
- c. set up docker and development environment: 50 setup docker container: 20 setup Eclipse development environment: 20 first commit to the team's Github repository: 10

6. Experiments and Analysis

(1) Sign Up

To sign up, just click the sign up page and fill in the required information, then you click the submit button, you will get a sign up success page, and your registration has been success.

localhost

Service ▾ Dataset ▾ About ▾ Log in

Sign up

Shuoyao Tesla Ma

shuoyaoma@gmail.com

...

CMU

Mr.

Carnegie Mellon University

412-234-5678

412-234-5678

Distributed Systems

Masters

Create Sign in

localhost

Service ▾ Dataset ▾ About ▾ Log in

Congratulations!

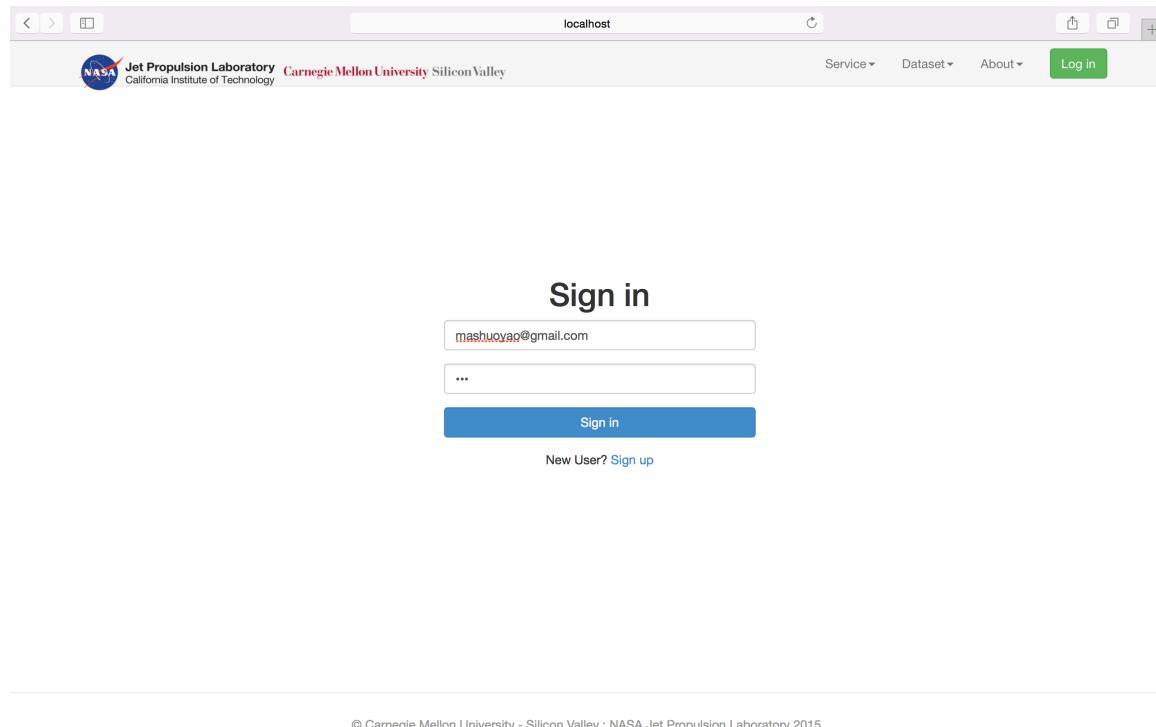
Registration has been successful.

The page will be redirected to the home page in 5 seconds

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(2) Sign In

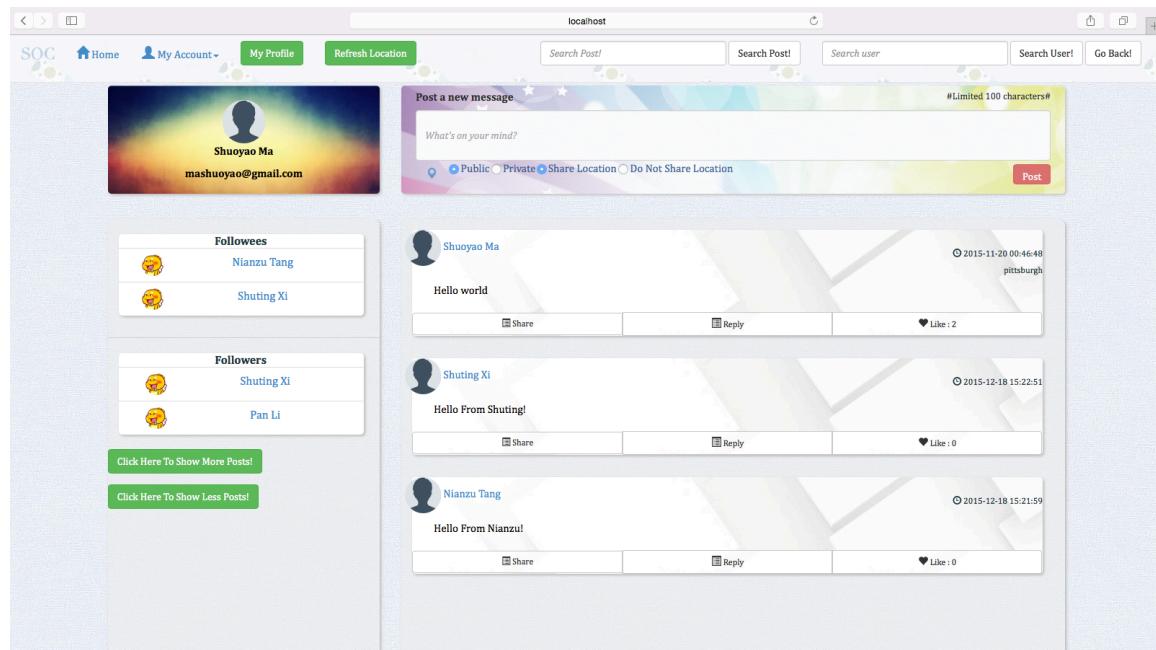
After you have signed up, you can use your email address and password to sign in:



The screenshot shows a web browser window titled "localhost". At the top, there is a navigation bar with icons for back, forward, search, and refresh. Below the navigation bar, the header includes the NASA Jet Propulsion Laboratory logo, Carnegie Mellon University, and Silicon Valley. On the right side of the header are links for "Service", "Dataset", "About", and a green "Log in" button. The main content area is titled "Sign in". It contains two input fields: the first is pre-filled with "mashuoya@gmail.com" and the second is empty with placeholder "...". Below these fields is a blue "Sign in" button. Underneath the buttons, there is a link "New User? Sign up". At the bottom of the page, there is a footer with the text "© Carnegie Mellon University - Silicon Valley · NASA, Jet Propulsion Laboratory 2015".

(3) Main Page

After you have signed in, you will see your main page



The screenshot shows a web browser window titled "localhost" displaying a social networking application interface. The top navigation bar includes links for "Home", "My Account", "My Profile", "Refresh Location", and search functions for "Post", "User", and "User". The main content area features a profile banner for "Shuoya Ma" with the email "mashuoya@gmail.com". A central "Post a new message" form is visible, with a text input field containing "What's on your mind?", a location dropdown set to "Public", and a "Post" button. To the left, there are two sections: "Followees" (listing "Nianzu Tang" and "Shuting Xi") and "Followers" (listing "Shuting Xi" and "Pan Li"). On the right, three posts are displayed in a timeline format: 1) "Hello world" by Shuoya Ma (timestamp: 2015-11-20 00:46:48, location: Pittsburgh), with 2 likes; 2) "Hello From Shuting!" by Shuting Xi (timestamp: 2015-12-18 15:22:51), with 0 likes; 3) "Hello From Nianzu!" by Nianzu Tang (timestamp: 2015-12-18 15:21:59), with 0 likes. Each post has "Share", "Reply", and "Like" buttons.

(4) Home Page

When you click a user name or you click the my profile button, you will see the home page of a user:

Personal Information

Name	Shuoyao Ma
Research	DS
Highest Degree	MS
Phone	7654321
Affiliation	ECE

Click Here To Show More Posts! | Click Here To Show Less Posts!

Shuoyao Ma

Hello world

private hello world

2015-11-20 00:46:48 | pittsburgh

2015-11-19 22:31:42 | pittsburgh

(5) Add Post

There are many options to add post.

Post added in private will not be seen in the main page, but can be seen in the user's own home page. In the following screen shots, the post "Hello from Shuoyao - Private" is added, but can be only seen in Shuoyao's home page when Shuoyao logs in.

Post a new message

Hello from Shuoyao - Private!

Public Private Share Location Do Not Share Location

Post

Followers

Nianzu Tang
Shuting Xi

Followers

Shuting Xi
Pan Li

Click Here To Show More Posts! | Click Here To Show Less Posts!

Shuoyao Ma

Hello world

2015-11-20 00:46:48 | pittsburgh

Shutting Xi

Hello From Shuting!

2015-12-18 15:22:51

Nianzu Tang

Hello From Nianzu!

2015-12-18 15:21:59

The screenshot shows the SOC application's main feed. At the top, there are navigation links: Home, My Account, My Profile, Refresh Location, Search Post!, Search User!, and Go Back!. Below the navigation is a search bar with placeholder text "Post a new message" and a note "#Limited 100 characters#". There are radio buttons for Public, Private, Share Location, and Do Not Share Location, with Public selected. A "Post" button is at the bottom right.

Followees:

- Nianzu Tang
- Shuting Xi

Followers:

- Shuting Xi
- Pan Li

Click Here To Show More Posts! and **Click Here To Show Less Posts!**

Posts:

- Shuoyao Ma (2015-11-20 00:46:48, pittsburgh) - Hello world
- Shuting Xi (2015-12-18 15:22:51) - Hello From Shuting!
- Nianzu Tang (2015-12-18 15:21:59) - Hello From Nianzu!

The screenshot shows the SOC application's user profile page for Shuoyao Ma. At the top, there are navigation links: Home, My Account, and a user icon. Below the navigation is a search bar with placeholder text "mashuoyao@gmail.com". There are buttons for Follow (green) and Unfollow (orange).

Personal Information:

Name	Shuoyao Ma
Research	DS
Highest Degree	MS
Phone	7654321
Affiliation	ECE

Click Here To Show More Posts! and **Click Here To Show Less Posts!**

Posts:

- Shuoyao Ma (2015-12-18 15:25:27, Pittsburgh) - Hello from Shuoyao - Private!
- Shuoyao Ma (2015-11-20 00:46:48, pittsburgh) - Hello world

Post Added in public will be seen by others in the main page. The Post “Hello World” Posted by Shuoyao has been seen in the main page and also in the home page.

SOC Home My Account My Profile Refresh Location

Post a new message #Limited 100 characters#

Hello From Shuoyao - Public

Public Private Share Location Do Not Share Location Post

Followees

- Nianzu Tang
- Shuting Xi

Followers

- Shuting Xi
- Pan Li

Click Here To Show More Posts! Click Here To Show Less Posts!

Shuoyao Ma 2015-11-20 00:46:48 Pittsburgh

Hello world

Share Reply Like : 2

Shuting Xi 2015-12-18 15:22:51

Hello From Shuting!

Share Reply Like : 0

Nianzu Tang 2015-12-18 15:21:59

Hello From Nianzu!

Share Reply Like : 0

SOC Home My Account My Profile Refresh Location

Post a new message #Limited 100 characters#

What's on your mind?

Public Private Share Location Do Not Share Location Post

Followees

- Nianzu Tang
- Shuting Xi

Followers

- Shuting Xi
- Pan Li

Click Here To Show More Posts! Click Here To Show Less Posts!

Shuoyao Ma 2015-11-20 00:46:48 Pittsburgh

Hello world

Share Reply Like : 2

Shuoyao Ma 2015-12-18 15:27:51 Pittsburgh

Hello From Shuoyao - Public

Share Reply Like : 0

Shuting Xi 2015-12-18 15:22:51

Hello From Shuting!

Share Reply Like : 0

Nianzu Tang 2015-12-18 15:21:59

There is also an option that you can choose to add post but do not share your location, the post without the location is posted when the user chose the “Do Not Share Location” option when posting:

(6) Delete Post

The user can delete his/her post in his/her own home page, you can see, the post “Hello World” Has been deleted:

localhost

Home My Account

SOC

Personal Information

Name	Shuoyao Ma
Research	DS
Highest Degree	MS
Phone	7654321
Affiliation	ECE

Click Here To Show More Posts!

Click Here To Show Less Posts!

Shuoyao Ma

Hello From Shuoyao - Public

Share Reply Like : 0 EditHere! Delete

2015-12-18 15:27:51 Pittsburgh

Shuoyao Ma

Hello from Shuoyao - Private!

Share Reply Like : 0 EditHere! Delete

2015-12-18 15:25:27 Pittsburgh

(7) Like Post

A user can like a post, you can see, the post “Hello From Shuoyao - Public” has been liked, it has 1 like:

localhost

Home My Profile Refresh Location

Search Post! Search Post! Search User! Go Back!

SOC

Shuoyao Ma

mashuoyao@gmail.com

Followees

Nianzu Tang
Shuting Xi

Followers

Shuting Xi
Pan Li

Post a new message

What's on your mind?

#Limited 100 characters#

Post

Public Private Share Location Do Not Share Location

Shuoyao Ma

Hello From Shuoyao - Public

Share Reply Like : 1

2015-12-18 15:27:51 Pittsburgh

Shuting Xi

Hello From Shuting!

Share Reply Like : 0

2015-12-18 15:22:51

Nianzu Tang

Hello From Nianzu!

Share Reply Like : 0

2015-12-18 15:21:59

Click Here To Show More Posts!

Click Here To Show Less Posts!

(8) Comment Post

A user can comment the post of other users, you can see, Shuoyao has commented Shuting's Post:

The image consists of two vertically stacked screenshots of a web-based social media application. Both screenshots have a header with navigation links: 'SOC' (Logo), 'Home', 'My Account', 'My Profile' (highlighted in green), 'Refresh Location', and search functions for 'Search Post!', 'Search user', 'Search User!', and 'Go Back!'. The left sidebar shows a profile picture of 'Shuoyao Ma' and her email 'mashuoya@gmail.com'. It lists 'Followees' (Nianzu Tang, Shuting Xi) and 'Followers' (Shuting Xi, Pan Li). Buttons at the bottom of the sidebar say 'Click Here To Show More Posts!' and 'Click Here To Show Less Posts!'. The main content area shows three posts from different users:

- Shuoyao Ma (Post 1):** 'Hello From Shuoyao - Public' posted at 2015-12-18 15:27:51 in Pittsburgh. It has 1 like. Options: Share, Reply.
- Shuting Xi (Post 2):** 'Hello From Shuting!' posted at 2015-12-18 15:22:51. It has 0 likes. Options: Share, Reply. Below it is a comment: 'Good job!' with a 'Submit' button.
- Nianzu Tang (Post 3):** 'Hello From Nianzu!' posted at 2015-12-18 15:21:59. It has 0 likes. Options: Share, Reply.

In the second screenshot, a new comment is added under Shuting Xi's post:

2015-12-18T15:30:14EST
Shuoyao Ma replied: Good Job!

Type Your comment Submit

(9) Share Post

A user can share the post of another user, you can see, Shuoyao has shared the post of Nianzu:

The screenshot shows the SOC application interface. At the top, there is a navigation bar with links for Home, My Account, My Profile, Refresh Location, and search functions for Search Post!, Search user, and Search User!. Below the navigation bar, the user's profile is displayed for "Shuoyao Ma" (mashuoya@gmail.com). The profile includes sections for Followers (Nianzu Tang, Shuting Xi) and Followers (Shuting Xi, Pan Li). A central area shows a timeline of posts. One post by "Shuoyao Ma" is visible: "Hello From Shuoyao - Public" posted on 2015-12-18 15:27:51 in Pittsburgh. Below it is a shared post from "Nianzu Tang": "Hello From Nianzu!" posted on 2015-12-18 15:30:42 in Pittsburgh. The shared post has a "Share" button, a "Reply" button, and a "Like" button (0 likes).

(10) Edit Post

A user can edit post in his/her own home page:

The screenshot shows the SOC application interface. The user is viewing their profile for "Shuoyao Ma" (mashuoya@gmail.com). A modal dialog box is open over the timeline, titled "Edit here:" with the content "Hello From Shuoyao - Public - Edited". There are "Cancel" and "OK" buttons at the bottom of the dialog. In the background, the timeline shows several posts. One post by "Shuoyao Ma" is visible: "Hello From Shuoyao - Public" posted on 2015-12-18 15:27:51 in Pittsburgh. This post has a "Share" button, a "Reply" button, a "Like" button (1 like), an "EditHere!" button (highlighted in blue), and a "Delete" button.

Personal Information

Name	Shuoyao Ma
Research	DS
Highest Degree	MS
Phone	7654321
Affiliation	ECE

Click Here To Show More Posts! **Click Here To Show Less Posts!**

Shuoyao Ma **Share** **Reply** **Like : 0** **EditHere!** **Delete** **2015-12-18 15:30:42** **pittsburgh**

Shuoyao Ma **Share** **Reply** **Like : 1** **EditHere!** **Delete** **2015-12-18 15:27:51** **Pittsburgh**

Shuoyao Ma **Share** **Reply** **Like : 0** **EditHere!** **Delete** **2015-12-18 15:25:27** **Pittsburgh**

(11) Search Post

User can search post by key word:

Edited **Search Post!** **Search user** **Search User!** **Go Back!**

Post a new message **#Limited 100 characters#**

What's on your mind?

Location: **Public** **Private** **Share Location** **Do Not Share Location** **Post**

Followees

- Nianzu Tang
- Shuting Xi

Followers

- Shuting Xi
- Pan Li

Click Here To Show More Posts! **Click Here To Show Less Posts!**

Shuoyao Ma **Share** **Reply** **Like : 1** **2015-12-18 15:27:51** **Pittsburgh**

Hello From Shuoyao - Public - Edited

Shuoyao Ma **Share** **Reply** **Like : 0** **2015-12-18 15:30:42** **pittsburgh**

Share from Nianzu Tang: Hello From Nianzu!

Shutting Xi **Share** **Reply** **Like : 0** **2015-12-18 15:22:51**

Hello From Shuting!

Nianzu Tang **Share** **Reply** **Like : 0** **2015-12-18 15:21:59**

(12) Search User

User can search other users:

SOC Home My Account My Profile Refresh Location

Search Post! Search user Search User! Go Back!

Shuoyao Ma
mashuoyao@gmail.com

Followers: Nianzu Tang, Shuting Xi

Followers: Shuting Xi, Pan Li

Post a new message: What's on your mind? #Limited 100 characters#

Public Private Share Location Do Not Share Location Post

Nianzu Tang

(13) Follow

A user can follow another user by entering the other user, and click follow in his/her home page, after that, the follower and the followee will be reflected in the main page of both users, you can see, Shuoyao has followed Nianzu:

Personal Information

Name	Nianzu Tang
Research	Back End
Highest Degree	Masters
Phone	1234567880
Affiliation	CMU

Click Here To Show More Posts!

Click Here To Show Less Posts!

Nianzu Tang
Hello From Nianzu!

Follow Unfollow

Share Reply Like: 0 Edit Here! Delete

2015-12-18 15:21:59

The screenshot shows the SOC application's homepage. At the top, there is a navigation bar with links for Home, My Account, My Profile, Refresh Location, and search fields for Post, User, and User. Below the navigation is Shuoyao Ma's profile card, which includes her name, email (mashuoyao@gmail.com), and a placeholder profile picture. To the right of the profile card is a form titled "Post a new message" with a text input field containing "What's on your mind?". Below this are sharing options: Public (selected), Private, Share Location, and Do Not Share Location, followed by a "Post" button. On the left side of the main content area, there are two sections: "Followees" (listing Nianzu Tang and Shuting Xi) and "Followers" (listing Shuting Xi and Pan Li). Below these sections are two green buttons: "Click Here To Show More Posts!" and "Click Here To Show Less Posts!". The main content area on the right displays four recent posts from different users:

- Shuoyao Ma** posted "Hello From Shuoyao - Public - Edited" at 2015-12-18 15:27:51 in Pittsburgh.
- Nianzu Tang** posted "Share from Nianzu Tang: Hello From Nianzu!" at 2015-12-18 15:30:42 in Pittsburgh.
- Shuting Xi** posted "Hello From Shuting!" at 2015-12-18 15:22:51.
- Nianzu Tang** posted "Hello From Nianzu!" at 2015-12-18 15:21:59.

(14) Unfollow

The user can also unfollow another user by entering his/her homepage and click the unfollow button, you can see, Shuoyao has unfollowed Nianzu:

The screenshot shows Nianzu Tang's profile page. At the top, there is a navigation bar with links for Home, My Account, and a placeholder profile picture. Below the navigation is Nianzu Tang's profile card, which includes her name, email (t@gmail.com), and a placeholder profile picture. To the right of the profile card is a "Follow" button (green) and an "Unfollow" button (orange). The main content area on the right displays one recent post from Nianzu Tang:

- Nianzu Tang** posted "Hello From Nianzu!" at 2015-12-18 15:21:59.

The screenshot shows a user profile page for 'Shuoyao Ma' (mashuoyao@gmail.com). The top navigation bar includes 'Home', 'My Account', 'My Profile', 'Refresh Location', 'Search Post!', 'Search User!', 'Go Back', and a search bar. The main content area features a profile picture, name, and email. Below this are sections for 'Followees' (Shuting Xi) and 'Followers' (Shuting Xi, Pan Li). A central message input field says 'Post a new message' with a character limit of 100 characters. Three posts are displayed:

- Post by Shuoyao Ma: 'Hello From Shuoyao - Public - Edited' (2015-12-18 15:27:51, Pittsburgh)
- Post by Shuoyao Ma: 'Share from Nianzu Tang: Hello From Nianzu!' (2015-12-18 15:30:42, Pittsburgh)
- Post by Shuting Xi: 'Hello From Shuting!' (2015-12-18 15:22:51, Pittsburgh)

 Buttons for 'Share', 'Reply', and 'Like' are present for each post.

(15) Edit User Profile

The user can edit the profile of himself/herself:

The screenshot shows a user profile page for 'Shuoyao Ma' (mashuoyao@gmail.com). The top navigation bar includes 'Home', 'My Account', 'Edit Profile' (which is currently selected), and 'Log out'. The main content area features a profile picture, name, and email. Below this are sections for 'Followers' (Shuting Xi, Pan Li) and 'Personal Information' (Name: Shuoyao Ma, Research: DS, Highest Degree: MS, Phone: 7654321, Affiliation: ECE). A dropdown menu for 'Edit Profile' is open, showing 'Edit Profile' and 'Log out'. Three posts are displayed:

- Post by Shuoyao Ma: 'Share from Nianzu Tang: Hello From Nianzu!' (2015-12-18 15:30:42, Pittsburgh)
- Post by Shuoyao Ma: 'Hello From Shuoyao - Public - Edited' (2015-12-18 15:27:51, Pittsburgh)
- Post by Shuoyao Ma: 'Hello from Shuoyao - Private!' (2015-12-18 15:25:27, Pittsburgh)

 Buttons for 'Share', 'Reply', 'Like', 'EditHere!', and 'Delete' are present for each post.

SOC

Affiliation:
CS

Title:
Student

Mailing Address:
5510 Bartlett

Phone Number:
7654321

Fax Number:
7654321

Research Fields:
DS

Highest Degree:
MS

Submit Cancel

SOC

Shuoyao Ma

Follow
Unfollow

Personal Information	
Name	Shuoyao Ma
Research	DS
Highest Degree	MS
Phone	7654321
Affiliation	CS

Click Here To Show More Posts!

Click Here To Show Less Posts!

Shuoyao Ma

Share from Nianzu Tang: Hello From Nianzu!

2015-12-18 15:30:42
Pittsburgh

Share Reply Like : 0 EditHere! Delete

Shuoyao Ma

Hello From Shuoyao - Public - Edited

2015-12-18 15:27:51
Pittsburgh

Share Reply Like : 1 EditHere! Delete

Shuoyao Ma

Hello from Shuoyao - Private!

2015-12-18 15:25:27
Pittsburgh

Share Reply Like : 0 EditHere! Delete

7. Conclusions and Future Work

(1) Conclusions

In this project, we implemented all the required Social Network Features successfully. Besides, we also achieved two more optional features. Our social network, Zetwork, can satisfy the basic needs of people in the contemporary society.

To be more specific, each user can have his/her own homepage and main page. In the homepage, the user can see his/her personal profile, photo and top ten latest posts posted by himself/herself in a time descending order. There is a more button to view all the posts. A user can also view other user's homepage either by searching the user directly or clicking the user's homepage link.

Then, in the main page, there are two lists, follower list and followee list. User can view all his/her followers/followees from there. He/She can also see the top ten most popular posts posted either by himself/herself or by his/her followees. There is also a more button to show all the posts.

User can publish posts in main page and he/she can set visibility for posts (If the post is private, it will only be showed on his/her personal homepage. If the post is public, it can be showed both on the personal homepage and personalized main page). Besides, the user can choose whether to share his/her location or not.

Besides, user can do all the basic operations on the posts. First, users can comment on any post that is available to them. They can also like a post or share a post. Then, when user is in his/her own homepage, he/she can delete or edit posts that are published by himself/herself. Other users will not have the access to do so.

What's more, our social network supports search functions. User can either search keywords of a post or a user. Then the corresponding searching results will appear if they contain the keywords. Thus, our search function is suitable for fuzzy search.

Finally, user can either follow/unfollow another user easily and he/she can edit his/her profile in the main menu.

(2) Future work

Since Zetwork only supports basic functions of a social network, there are some improvements that can be made to it. Here are some ideas for the future work of Zetwork.

a) Active Log Feature

This feature is used to record the how often the user is logged into the system. The frequency of a user logging into the website social network system in some way shows how the user like the service provided by the website. The user can choose the share his/her active log to other user or not. It could be one of the information listed in the user profile. Similar to the contribution section on "Github" website.

b) Live Chatting Feature

A live chatting feature could be added to our social network system so that users can send instant messages to each other.

c) Third Party Identification

A Third Party Identification feature allows user to be more easily signed into our website, which improved the popularity of our social network .

8. Contribution of Each Team Member

In our project development process, we adopted the horizontal arrangement method. Two teammates, Pan Li and Shuoyao Ma, are responsible for front end implementation while other two teammates, Shuteng Xi and Nianzu Tang, take charge of back end implementation.

9. Tutorial

In this part, we will provide a hand-by-hand tutorial of how to use the Zetwork platform.

(1) Set up

To set up, please follow the following steps:

a) Download the project from github or other code repository where the code project is.

b) In terminal, cd into the backend project folder and find the folder called “dbDump”. To import the database data into database, please first log into the mysql shell and use the “testdb” database by this command “use testdb;” and then use the command “source databasedump.sql” to import the original data.

c) In terminal, cd into the frontend folder and run the command:

./activator run

d) In terminal, cd into the backend folder and run the command:

./activator "run 9034"

e) The Database connection information is as follows:

user: root

password: set in your own computer as “root”

f) Login URL: localhost:9000/login?

(2) Sign Up

To sign up, just click the sign up page and fill in the required information, then you click the submit button, you will get a sign up success page, and your registration has been success.

localhost

NASA Jet Propulsion Laboratory Carnegie Mellon University Silicon Valley

Service ▾ Dataset ▾ About ▾ Log in

Sign up

Shuoyao Tesla Ma

shuoyaoma@gmail.com

...

...

CMU

Mr.

Carnegie Mellon University

412-234-5678

412-234-5678

Distributed Systems

Masters

Create Sign in

localhost

NASA Jet Propulsion Laboratory Carnegie Mellon University Silicon Valley

Service ▾ Dataset ▾ About ▾ Log in

Congratulations!

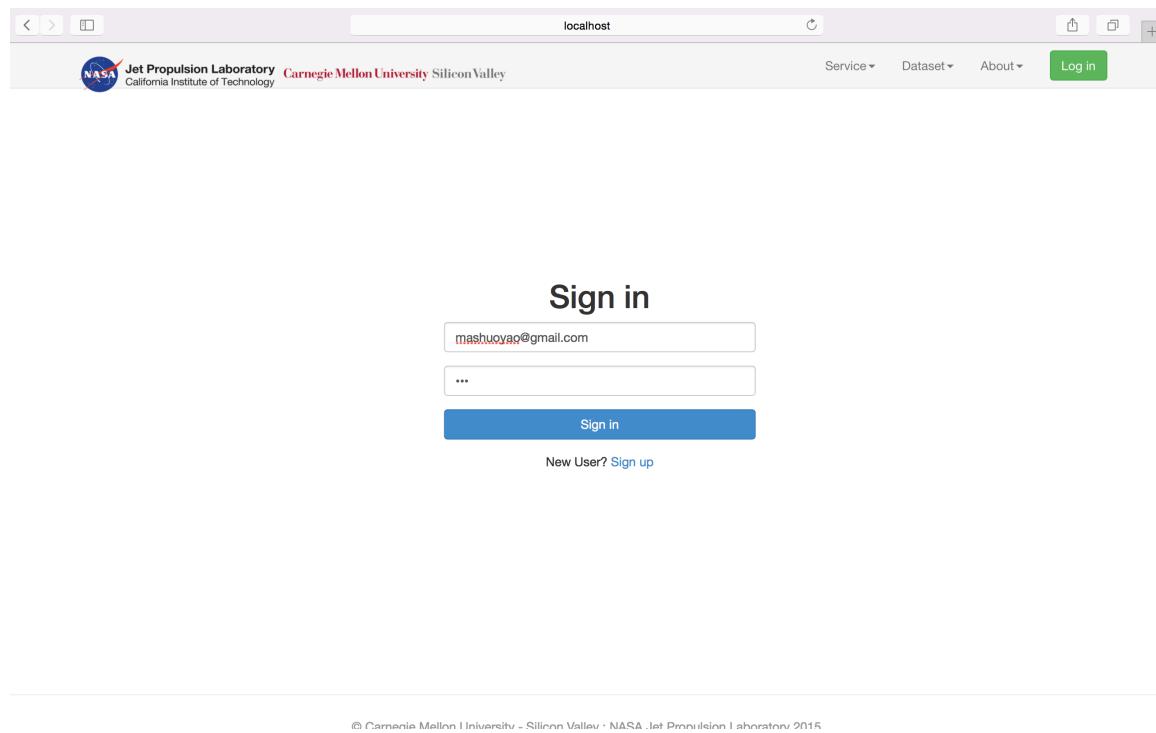
Registration has been successful.

The page will be redirected to the home page in 5 seconds

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(3) Sign In

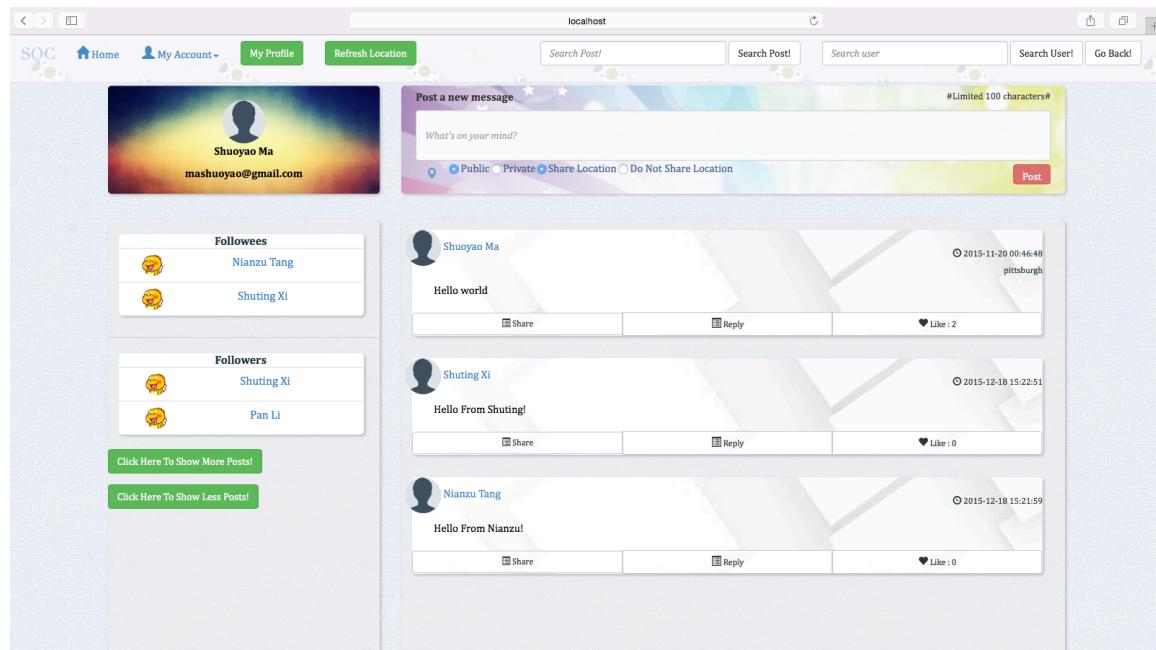
After you have signed up, you can use your email address and password to sign in:



The screenshot shows a web browser window titled "localhost". At the top, there is a navigation bar with icons for back, forward, search, and refresh. Below the navigation bar, the header includes the NASA Jet Propulsion Laboratory logo, Carnegie Mellon University Silicon Valley text, and links for Service, Dataset, About, and Log in. The main content area is titled "Sign in" and contains two input fields: one for email ("mashuoya@gmail.com") and one for password (""). A blue "Sign in" button is centered below the fields. Below the button, a link says "New User? Sign up". At the bottom of the page, there is a footer with the text "© Carnegie Mellon University - Silicon Valley · NASA Jet Propulsion Laboratory 2015".

(4) Main Page

After you have signed in, you will see your main page

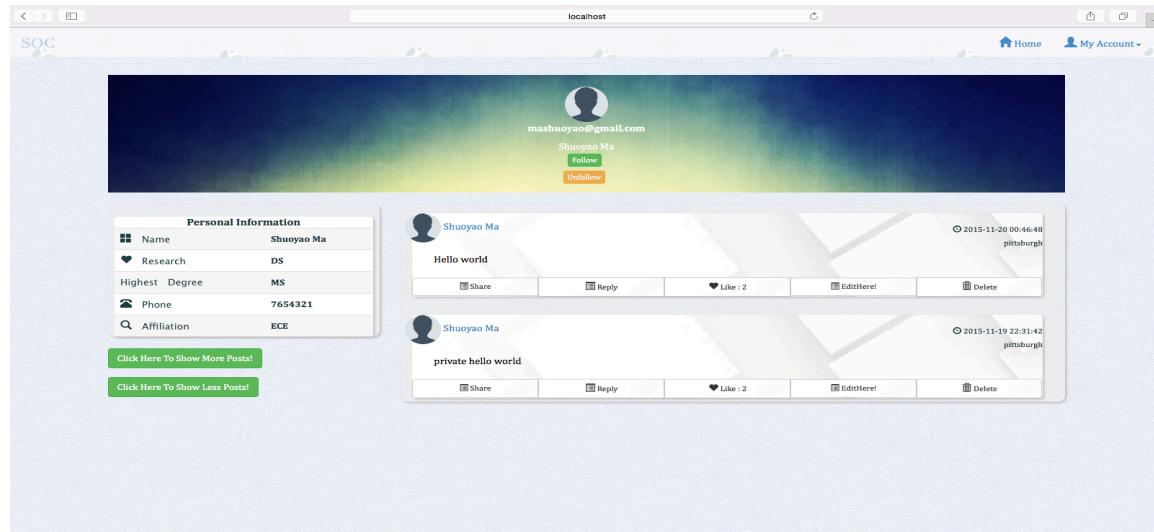


The screenshot shows a web browser window titled "localhost" displaying a social media application interface. The top navigation bar includes a "SOC" logo, "Home", "My Account", "My Profile", "Refresh Location", and search functions for "Post", "User", and "Dataset". On the left side, there are two boxes: "Followees" (listing Nianzu Tang and Shuting Xi) and "Followers" (listing Shuting Xi and Pan Li). Below these are buttons for "Click Here To Show More Posts!" and "Click Here To Show Less Posts!". The main content area shows three posts from different users: Shuoyao Ma, Shuting Xi, and Nianzu Tang, each with a timestamp, location, and interaction options (Share, Reply, Like).

User	Post Content	Date	Location	Like Count
Shuoyao Ma	Hello world	2015-11-20 00:46:48	Pittsburgh	2
Shuting Xi	Hello From Shuting!	2015-12-18 15:22:51		0
Nianzu Tang	Hello From Nianzu!	2015-12-18 15:21:59		0

(5) Home Page

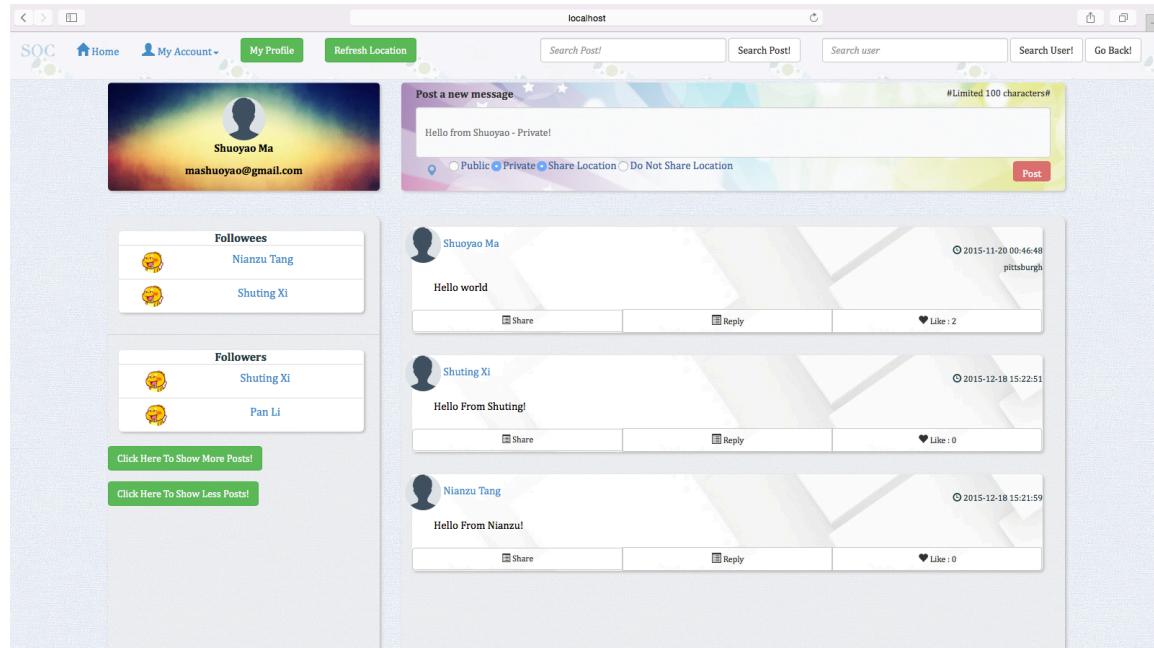
When you click a user name or you click the my profile button, you will see the home page of a user:



(6) Add Post

There are many options to add post.

Post added in private will not be seen in the main page, but can be seen in the user's own home page. In the following screen shots, the post "Hello from Shuoyao - Private" is added, but can be only seen in Shuoyao's home page when Shuoyao logs in.



The screenshot shows the SOC application's main profile page. At the top, there are navigation links: Home, My Account, My Profile, Refresh Location, Search Post!, Search User!, and Go Back!. Below the header, the user's profile picture and name (Shuoyao Ma) are displayed, along with their email (mashuoyao@gmail.com). A "Post a new message" dialog box is open, prompting the user to enter a message ("What's on your mind?") and providing options for visibility (Public, Private, Share Location, Do Not Share Location) and a character limit (100 characters). To the left of the main content area, there are two sections: "Followees" (listing Nianzu Tang and Shuting Xi) and "Followers" (listing Shuting Xi and Pan Li). At the bottom of these sections are green buttons: "Click Here To Show More Posts!" and "Click Here To Show Less Posts!". The main content area displays three posts from other users:

- Shuoyao Ma (2015-11-20 00:46:48, Pittsburgh): Hello world
- Shuting Xi (2015-12-18 15:22:51, Pittsburgh): Hello From Shuting!
- Nianzu Tang (2015-12-18 15:21:59, Pittsburgh): Hello From Nianzu!

Each post includes standard interaction buttons: Share, Reply, and Like (with a count of 2).

This screenshot shows the user profile page for Shuoyao Ma. The top navigation bar includes Home, My Account, and a user icon. The profile section features the user's picture, name (Shuoyao Ma), and email (mashuoyao@gmail.com). Below the profile are two buttons: "Follow" (green) and "Unfollow" (orange). The "Personal Information" section lists the following details:

Name	Shuoyao Ma
Research	DS
Highest Degree	MS
Phone	7654321
Affiliation	ECE

At the bottom of this section are green buttons: "Click Here To Show More Posts!" and "Click Here To Show Less Posts!". The main content area displays two posts from Shuoyao Ma:

- Shuoyao Ma (2015-12-18 15:25:27, Pittsburgh): Hello from Shuoyao - Private! (This post is private and only visible to the user who posted it.)
- Shuoyao Ma (2015-11-20 00:46:48, Pittsburgh): Hello world

Both posts include standard interaction buttons: Share, Reply, Like (0 or 2), EditHere!, and Delete.

Post Added in public will be seen by others in the main page. The Post “Hello World” Posted by Shuoyao has been seen in the main page and also in the home page.

SOC Home My Account My Profile Refresh Location

localhost Search Post! Search Post! Search user Search User! Go Back!

Post a new message #Limited 100 characters#

Hello From Shuoyao - Public

Public Private Share Location Do Not Share Location Post

Followees

- Nianzu Tang
- Shuting Xi

Followers

- Shuting Xi
- Pan Li

Click Here To Show More Posts! Click Here To Show Less Posts!

Shuoyao Ma 2015-11-20 00:46:48 Pittsburgh
Hello world Share Reply Like : 2

Shuting Xi 2015-12-18 15:22:51
Hello From Shuting! Share Reply Like : 0

Nianzu Tang 2015-12-18 15:21:59
Hello From Nianzu! Share Reply Like : 0

Shuoyao Ma 2015-11-20 00:46:48 Pittsburgh
Hello world Share Reply Like : 2

Shuoyao Ma 2015-12-18 15:27:51 Pittsburgh
Hello From Shuoyao - Public Share Reply Like : 0

Shuting Xi 2015-12-18 15:22:51
Hello From Shuting! Share Reply Like : 0

Nianzu Tang 2015-12-18 15:21:59
Hello From Nianzu! Share Reply Like : 0

SOC Home My Account My Profile Refresh Location

localhost Search Post! Search Post! Search user Search User! Go Back!

Post a new message #Limited 100 characters#

What's on your mind?

Public Private Share Location Do Not Share Location Post

Followees

- Nianzu Tang
- Shuting Xi

Followers

- Shuting Xi
- Pan Li

Click Here To Show More Posts! Click Here To Show Less Posts!

Shuoyao Ma 2015-11-20 00:46:48 Pittsburgh
Hello world Share Reply Like : 2

Shuoyao Ma 2015-12-18 15:27:51 Pittsburgh
Hello From Shuoyao - Public Share Reply Like : 0

Shuting Xi 2015-12-18 15:22:51
Hello From Shuting! Share Reply Like : 0

Nianzu Tang 2015-12-18 15:21:59
Hello From Nianzu! Share Reply Like : 0

Shuoyao Ma 2015-11-20 00:46:48 Pittsburgh
Hello world Share Reply Like : 2

Shuoyao Ma 2015-12-18 15:27:51 Pittsburgh
Hello From Shuoyao - Public Share Reply Like : 0

Shuting Xi 2015-12-18 15:22:51
Hello From Shuting! Share Reply Like : 0

Nianzu Tang 2015-12-18 15:21:59
Hello From Nianzu! Share Reply Like : 0

The screenshot shows a user profile for Shuoyao Ma. At the top, there is a placeholder for a profile picture and the email address mashuoyao@gmail.com. Below this, a green button labeled "Follow" is visible next to an "Unfollow" button. On the left, a sidebar displays "Personal Information" with fields: Name (Shuoyao Ma), Research (DS), Highest Degree (MS), Phone (7654321), and Affiliation (ECE). Two green buttons at the bottom of this sidebar allow users to "Click Here To Show More Posts!" or "Click Here To Show Less Posts!". The main content area lists three posts by Shuoyao Ma:

- Hello From Shuoyao - Public** (2015-12-18 15:27:51, Pittsburgh) - This post has 0 likes.
- Hello from Shuoyao - Private!** (2015-12-18 15:25:27, Pittsburgh) - This post has 0 likes.
- Hello world** (2015-11-20 00:46:48, Pittsburgh) - This post has 2 likes.

There is also an option that you can choose to add post but do not share your location, the post without the location is posted when the user chose the “Do Not Share Location” option when posting:

The screenshot shows a user profile for Shuoyao Ma. At the top, there is a placeholder for a profile picture and the email address mashuoyao@gmail.com. Below this, a green button labeled "Post" is visible. The main content area lists four posts by Shuoyao Ma:

- Hello world** (2015-11-20 00:46:48, Pittsburgh) - This post has 2 likes.
- Hello From Shuoyao - Public** (2015-12-18 15:27:51, Pittsburgh) - This post has 0 likes.
- Hello From Shuting!** (2015-12-18 15:22:51, Pittsburgh) - This post has 0 likes.
- Nianzu Tang** (2015-12-18 15:21:59, Pittsburgh)

On the left, a sidebar displays "Followees" (Nianzu Tang, Shuting Xi) and "Followers" (Shuting Xi, Pan Li). Two green buttons at the bottom of this sidebar allow users to "Click Here To Show More Posts!" or "Click Here To Show Less Posts!".

(7) Delete Post

The user can delete his/her post in his/her own home page, you can see, the post “Hello World” Has been deleted:

SOC

localhost

Home My Account

Personal Information

Name	Shuoyao Ma
Research	DS
Highest Degree	MS
Phone	7654321
Affiliation	ECE

Click Here To Show More Posts!

Click Here To Show Less Posts!

Shuoyao Ma

Hello From Shuoyao - Public

Share Reply Like : 0 EditHere! Delete

2015-12-18 15:27:51 Pittsburgh

Shuoyao Ma

Hello from Shuoyao - Private!

Share Reply Like : 0 EditHere! Delete

2015-12-18 15:25:27 Pittsburgh

(8) Like Post

A user can like a post, you can see, the post “Hello From Shuoyao - Public” has been liked, it has 1 like:

SOC Home My Account My Profile Refresh Location

Search Post! Search Post! Search User! Go Back!

Post a new message #Limited 100 characters#

What's on your mind?

Location: Public Private Share Location Do Not Share Location Post

Followees

Nianzu Tang
Shuting Xi

Followers

Shuting Xi
Pan Li

Click Here To Show More Posts!

Click Here To Show Less Posts!

Shuoyao Ma

Hello From Shuoyao - Public

Share Reply Like : 1

2015-12-18 15:27:51 Pittsburgh

Shuting Xi

Hello From Shuting!

Share Reply Like : 0

2015-12-18 15:22:51

Nianzu Tang

Hello From Nianzu!

Share Reply Like : 0

2015-12-18 15:21:59

(9) Comment Post

A user can comment the post of other users, you can see, Shuoyao has commented Shuting's Post:

The image consists of two vertically stacked screenshots of a web-based social media application. Both screenshots have a header with navigation links: 'SOC' (Logo), 'Home', 'My Account', 'My Profile' (highlighted in green), 'Refresh Location', and search functions for 'Search Post!', 'Search user', 'Search User!', and 'Go Back!'. The left sidebar shows a profile picture of 'Shuoyao Ma' and her email 'mashuoya@gmail.com'. It lists 'Followees' (Nianzu Tang, Shuting Xi) and 'Followers' (Shuting Xi, Pan Li). Buttons at the bottom of the sidebar say 'Click Here To Show More Posts!' and 'Click Here To Show Less Posts!'. The main content area shows three posts from different users:

- Shuoyao Ma (Public):** 'Hello From Shuoyao - Public' posted at 2015-12-18 15:27:51 in Pittsburgh. It has 1 like.
- Shuting Xi (Public):** 'Hello From Shuting!' posted at 2015-12-18 15:22:51. It has 0 likes. Below it is a comment: 'Good job!' with a 'Submit' button.
- Nianzu Tang (Public):** 'Hello From Nianzu!' posted at 2015-12-18 15:21:59. It has 0 likes.

In the second screenshot, a new comment is added under Shuting Xi's post:

2015-12-18T15:30:14EST
Shuoyao Ma replied: Good Job!

Type Your comment

(10) Share Post

A user can share the post of another user, you can see, Shuoyao has shared the post of Nianzu:

The screenshot shows the SOC application interface. At the top, there is a navigation bar with links for Home, My Account, My Profile, Refresh Location, and search functions for Search Post!, Search user, and Search User!. Below the navigation bar, the user's profile is displayed, showing the name 'Shuoyao Ma' and email 'mashuoya@gmail.com'. On the left side, there are sections for 'Followers' (Nianzu Tang, Shuting Xi) and 'Followers' (Shuting Xi, Pan Li). A central area displays a timeline of posts. The first post is from 'Shuoyao Ma' with the message 'Hello From Shuoyao - Public' at 15:27:51 on 18/12/2015, located in Pittsburgh. Below it is a shared post from 'Nianzu Tang' with the message 'Hello From Nianzu!' at 15:30:42 on 18/12/2015, also in Pittsburgh. Further down is a post from 'Shuting Xi' with the message 'Hello From Shuting!' at 15:22:51 on 18/12/2015. The last visible post is from 'Nianzu Tang' with the message 'Hello From Nianzu!' at 15:21:59 on 18/12/2015. Each post includes options to Share, Reply, and Like.

(11) Edit Post

A user can edit post in his/her own home page:

The screenshot shows the SOC application interface. The user's profile is displayed at the top, with the name 'Shuoyao Ma' and email 'mashuoya@gmail.com'. A modal window titled 'Edit here:' is open over the timeline, containing the text 'Hello From Shuoyao - Public - Edited'. Below the modal, the timeline shows the user's own posts: 'Hello From Shuoyao - Public' at 15:30:42 on 18/12/2015, 'Hello From Shuoyao - Public' at 15:27:51 on 18/12/2015, and 'Hello from Shuoyao - Private!' at 15:25:27 on 18/12/2015. Each post includes options to Share, Reply, Like, EditHere!, and Delete.

SOC

localhost

Shuoyao Ma

mashuoyao@gmail.com

Personal Information

Name	Shuoyao Ma
Research	DS
Highest Degree	MS
Phone	7654321
Affiliation	ECE

Click Here To Show More Posts!

Click Here To Show Less Posts!

Shuoyao Ma 2015-12-18 15:30:42 pittsburgh
Share Reply Like : 0 EditHere! Delete
Share From Nianzu Tang: Hello From Nianzu!

Shuoyao Ma 2015-12-18 15:27:51 Pittsburgh
Share Reply Like : 1 EditHere! Delete
Hello From Shuoyao - Public - Edited

Shuoyao Ma 2015-12-18 15:25:27 Pittsburgh
Share Reply Like : 0 EditHere! Delete
Hello from Shuoyao - Private!

(12) Search Post

User can search post by key word:

SOC Home My Account My Profile Refresh Location

Edited Search Post! Search user Search User! Go Back!

Shuoyao Ma mashuoyao@gmail.com

Followees

- Nianzu Tang
- Shuting Xi

Followers

- Shuting Xi
- Pan Li

Post a new message #Limited 100 characters#

What's on your mind?

Location: Public Private Share Location Do Not Share Location

Shuoyao Ma 2015-12-18 15:27:51 Pittsburgh
Share Reply Like : 1
Hello From Shuoyao - Public - Edited

Shuoyao Ma 2015-12-18 15:30:42 pittsburgh
Share Reply Like : 0
Share From Nianzu Tang: Hello From Nianzu!

Shuting Xi 2015-12-18 15:22:51
Hello From Shuting!
Share Reply Like : 0

Nianzu Tang 2015-12-18 15:21:59

The screenshot shows the SOC application's user profile page. At the top, there are navigation links: Home, My Account, My Profile, Refresh Location, Search Post!, Search Post!, Search User!, and Go Back!. The main area features a profile banner for 'Shuoyao Ma' with the email 'mashuoyao@gmail.com'. Below the banner, there are two sections: 'Followees' (listing 'Nianzu Tang' and 'Shuting Xi') and 'Followers' (listing 'Shuting Xi' and 'Pan Li'). Two green buttons at the bottom of these sections allow users to show more or less posts. To the right, a 'Post a new message' form is displayed with a placeholder 'What's on your mind?'. Below it, a post from 'Shuoyao Ma' is shown, reading 'Hello From Shuoyao - Public - Edited' with a timestamp of '2015-12-18 15:27:51' and location 'Pittsburgh'. It has one like. A 'Share' and 'Reply' button are below the post.

(13) Search User

User can search other users:

The screenshot shows the SOC application's user profile page after a search for 'Nianzu'. The search bar at the top contains the name 'Nianzu'. The rest of the interface is identical to the previous screenshot, showing the user profile for 'Shuoyao Ma' and the post feed. The search results for 'Nianzu' are not immediately visible in the main content area, but the search bar reflects the query.

SOC Home My Account My Profile Refresh Location

Search Post! Search user Search User! Go Back!

Shuoyao Ma
mashuoyao@gmail.com

Followers: Nianzu Tang, Shuting Xi

Followees: Shuting Xi, Pan Li

Post a new message: What's on your mind? #Limited 100 characters#

Public Private Share Location Do Not Share Location Post

Nianzu Tang

(14) Follow

A user can follow another user by entering the other user, and click follow in his/her home page, after that, the follower and the followee will be reflected in the main page of both users, you can see, Shuoyao has followed Nianzu:

Personal Information

Name	Nianzu Tang
Research	Back End
Highest Degree	Masters
Phone	1234567880
Affiliation	CMU

Click Here To Show More Posts!

Click Here To Show Less Posts!

Nianzu Tang
Hello From Nianzu!

Follow Unfollow

Share Reply Like: 0 Edit Here! Delete

2015-12-18 15:21:59

The screenshot shows a user profile for 'Shuoyao Ma' (mashuoyao@gmail.com). On the left, there's a sidebar with sections for 'Followees' (Nianzu Tang, Shuting Xi) and 'Followers' (Shuting Xi, Pan Li). Below these are buttons to 'Click Here To Show More Posts!' and 'Click Here To Show Less Posts!'. The main area displays a series of messages:

- Shuoyao Ma: Hello From Shuoyao - Public - Edited (2015-12-18 15:27:51, Pittsburgh)
- Shuoyao Ma: Share | Reply | Like: 1
- Nianzu Tang: Share From Nianzu Tang: Hello From Nianzu! (2015-12-18 15:30:42, Pittsburgh)
- Shuting Xi: Share Hello From Shuting! (2015-12-18 15:22:51)
- Nianzu Tang: Share (2015-12-18 15:21:59)

(15) Unfollow

The user can also unfollow another user by entering his/her homepage and click the unfollow button, you can see, Shuoyao has unfollowed Nianzu:

The screenshot shows the user profile for 'Nianzu Tang' (t@gmail.com). The profile page includes a 'Personal Information' section with fields like Name (Nianzu Tang), Research (Back End), Highest Degree (Masters), Phone (1234567880), and Affiliation (CMU). There are buttons to 'Click Here To Show More Posts!' and 'Click Here To Show Less Posts!'. A message from Nianzu Tang is displayed:

- Nianzu Tang: Hello From Nianzu! (2015-12-18 15:21:59)
- Nianzu Tang: Share | Reply | Like: 0 | EditHere! | Delete

Below the message, there are 'Follow' and 'Unfollow' buttons. The 'Unfollow' button is highlighted in green.

The screenshot shows a user profile page for 'Shuoyao Ma' (mashuoyao@gmail.com). The top navigation bar includes 'Home', 'My Account', 'My Profile', 'Refresh Location', 'Search Post!', 'Search User!', 'Go Back', and a search bar. The main area displays the user's profile picture, name, and email. Below this are sections for 'Followees' (Shuting Xi) and 'Followers' (Shuting Xi, Pan Li). A central message input field says 'Post a new message' with a character limit of 100 characters. Below it, three posts are shown:

- Shuoyao Ma** (2015-12-18 15:27:51, Pittsburgh): Hello From Shuoyao - Public - Edited. Options: Share, Reply, Like: 1.
- Shuoyao Ma** (2015-12-18 15:30:42, Pittsburgh): Share from Nianzu Tang: Hello From Nianzu!. Options: Share, Reply, Like: 0.
- Shuting Xi** (2015-12-18 15:22:51, Pittsburgh): Hello From Shuting!. Options: Share, Reply, Like: 0.

Buttons at the bottom include 'Click Here To Show More Posts!' and 'Click Here To Show Less Posts!'.

(16) Edit User Profile

The user can edit the profile of himself/herself:

The screenshot shows a user profile page for 'Shuoyao Ma' (mashuoyao@gmail.com). The top navigation bar includes 'Home', 'My Account', 'Edit Profile' (highlighted in a dropdown menu), and 'Log out'. The main area displays the user's profile picture, name, and email. Below this are sections for 'Followees' (Shuting Xi) and 'Followers' (Shuting Xi, Pan Li). A central message input field says 'Post a new message' with a character limit of 100 characters. Below it, three posts are shown:

- Shuoyao Ma** (2015-12-18 15:30:42, Pittsburgh): Share from Nianzu Tang: Hello From Nianzu!. Options: Share, Reply, Like: 0, EditHere!, Delete.
- Shuoyao Ma** (2015-12-18 15:27:51, Pittsburgh): Hello From Shuoyao - Public - Edited. Options: Share, Reply, Like: 1, EditHere!, Delete.
- Shuoyao Ma** (2015-12-18 15:25:27, Pittsburgh): Hello from Shuoyao - Private!. Options: Share, Reply, Like: 0, EditHere!, Delete.

Buttons at the bottom include 'Click Here To Show More Posts!' and 'Click Here To Show Less Posts!'.

SOC

Affiliation:
CS

Title:
Student

Mailing Address:
5510 Bartlett

Phone Number:
7654321

Fax Number:
7654321

Research Fields:
DS

Highest Degree:
MS

Submit Cancel

SOC

Personal Information

Name	Shuoyao Ma
Research	DS
Highest Degree	MS
Phone	7654321
Affiliation	CS

Click Here To Show More Posts!

Click Here To Show Less Posts!

Shuoyao Ma

Share from Nianzu Tang: Hello From Nianzu!

Share Reply Like : 0 EditHere! Delete

Shuoyao Ma

Hello From Shuoyao - Public - Edited

Share Reply Like : 1 EditHere! Delete

Shuoyao Ma

Hello from Shuoyao - Private!

Share Reply Like : 0 EditHere! Delete

Appendix:

- Check in everything onto GitHub under the predefined directory including the following items
 - Readme file: Describe briefly the purpose of the project, how to download and install the software, how to use the software
Please refer in the “README.md” file in the github repository
 - API (sub-directory): instruct APIs as well as descriptions and examples
Please refer in the “1.API.docx” file in the document folder
 - Test Suite (sub-directory): a collection of test examples and descriptions
Please refer in the “2.TestSuite.docx” file in the document folder
 - src (sub-directory): include all source code categorized by packages
Please refer in the code folder “ApacheCMDA-Backend” and “ApacheCMDA-Frontend”
 - lib (sub-directory): include all related library packages needed to support the project
Please refer in the code folder “ApacheCMDA-Backend” and “ApacheCMDA-Frontend”
 - conf (sub-directory): include any confirmation settings and files
Please refer in the code folder “ApacheCMDA-Backend” and “ApacheCMDA-Frontend”
 - app (sub-directory): any applications built on top of the APIs
Please refer in the code folder “ApacheCMDA-Backend” and “ApacheCMDA-Frontend”
 - contact: please provide every team member’s contact information (cell number, personal email)
Please refer in the “3.Contact.docx” file in the document folder

- Check in everything onto DockerHub under the predefined directory
- Documents (sub-directory): in different WORD files
 - access information: URL, user name/password
Please refer in the “4.Access information Username and Password” file in the document folder
 - download and installation documents with step-wise descriptions
Please refer in the “5.Download and Running instruction” file in the document folder
 - executive summary
Please refer in the “6.Executive Summary” file in the document folder
 - background and motivation
Please refer in the “7.Background and Motivation” file in the document folder
 - assumptions and considerations
Please refer in the “8.Assumptions and Considerations” file in the document folder
 - design documents (architectural design documents and various diagrams e.g., UML files)
Please refer in the “9.Design Documents” file in the document folder
 - discussions
Please refer in the “10.Discussion” file in the document folder
 - presentations (ppt file)
Please refer in the “11.ZetWork_SOC Project Final Presentation” file in the document folder
 - tutorial: step-by-step usage file with screen shots included
Please refer in the “12.Tutorial” file in the document folder
 - future work: to-do list and descriptions
Please refer in the “13.Future Work and ToDo List” file in the document folder
 - technical report
Please refer in the this file in the document folder

- Transit the knowledge to either Advisor or a signed student (schedule time to sit down for transition)