



# **Opinion Mining**

## **Opinion Mining for Social Network Platforms Service/Website**

Team

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Tyler Mooney

Michael Menjivar

Delivered to

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14 October 2021

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## **Introduction of Document**

This document's purpose is to present the product constructed by our team of developers by showing off it's various functionalities, use cases, and the test cases used to verify its viability. Our product has several main components that users will be able to utilize, including the ability to create and customize an account, connect social media accounts to mine for opinions, and more. The application is made up of three main components: a user interface which allows the user to utilize all the functionalities of the application, a database which will store user information among other things, and a search engine with which users will primarily be using the application for. The search engine will allow users to quickly filter social media posts and accounts for opinions on whatever they please. The target audience for this product is company executives wanting to gauge and gather the opinions of the public on their products, whether they are positive or negative.

As a side note, the Statement of Work for our project has been changed as of the writing of this document.

## **Requirements / System Modeling**

To gather the functional requirements for our application, we first brainstormed the process a user would go through to use the application as desired, starting from entering the website. The ability for users to create an account and login were obvious enough. Once the user logs in however, we brainstormed all the key functionalities the user would want to need to have. We went through several possible pathways the user could take through the application to figure out what was required for the application to function.

For non-functional requirements, we envisioned a finished product that a potential user would see, with all the functional requirements implemented. We put ourselves in the shoes of the user to consider the subtleties and small details the user would notice when deciding if they liked or disliked the product. This included response time, ease of use, and options for use (i.e., PC, mobile, etc). Whenever a different page needed to be loaded, or an optional functionality would be preferred, we would write that down.

## Functional Requirements

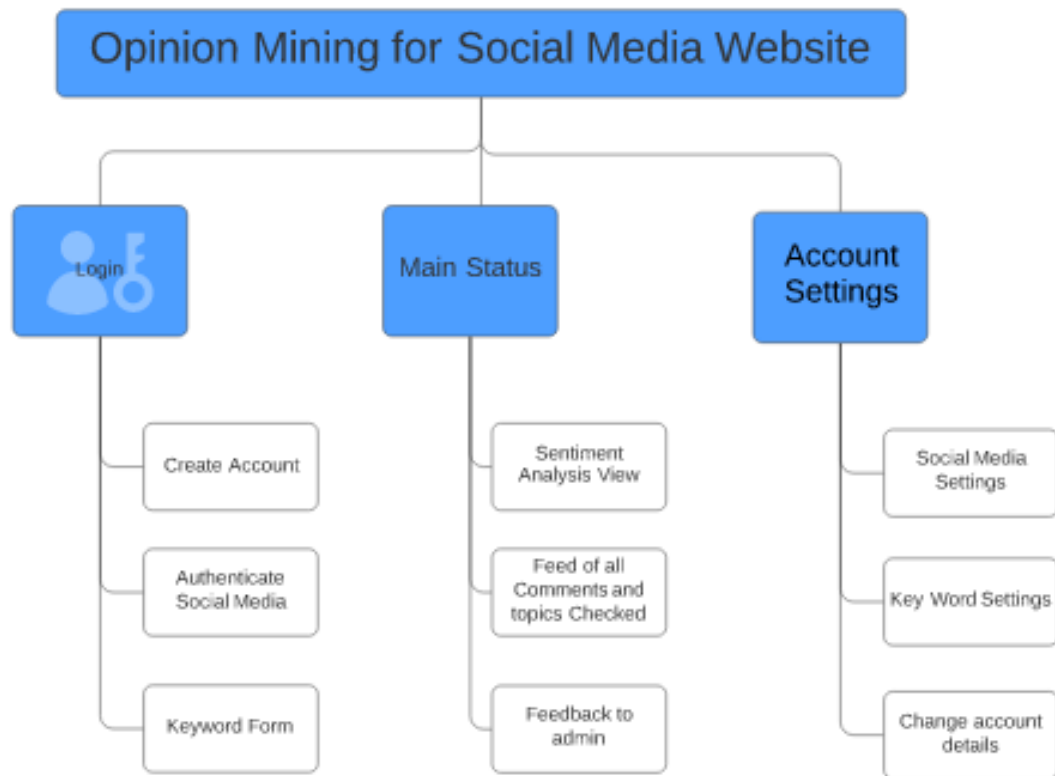
1. (Lisa chen) Users will be able to go to page to sign in
2. (Lisa chen) Users will be able to go to a page to see their searched results
3. (Lisa chen) When performing a search, users will be able to view the most closely related result at the top of the results
4. (Lisa Chen) When logging in, users will be able to go to a page to start searching for opinions
5. (Lisa Chen) Users will be able to view results in a list view
6. (Lisa Chen) Users will be able to go to a page to see account settings
7. (Michael Stinnett) Users will be able to give the application their facebook, twitter, instagram, and reddit accounts for access points.
8. (Michael Stinnett) Users will be able to check or uncheck chosen key phrases used in the mining algorithm.
9. (Michael Stinnett) Users will be able to see each individual comment, post, tweet, etc. and see how that body of text got tagged.
10. (Michael Stinnett) Users will be able to view the comments posted by other users.
11. (Michael Stinnett) Users will be able to click on a particular topic or comment and provide their take on the matter.
12. (Michael Stinnett) Users will be able to view topics or comments by weight class (Good, Bad, Worst)
13. (Tyler Mooney) Users will be able to go to a profile page with all their connected social media accounts
14. (Tyler Mooney) Users will be able to disconnect any social media accounts they have connected to stop mining of data
15. (Tyler Mooney) Users will be able to filter search results by most positive or most negative opinions
16. (Tyler Mooney) Users will be able to go to a page that will show a timeline graph and charts of opinions on a topic or post
17. (Tyler Mooney) Users will be able to filter search results based on the platform an opinion is mined from, such as Facebook, Twitter, Instagram, and Reddit.
18. (Tyler Mooney) Users will be able to go to a page with trending topics or posts that they can select and explore more about
19. (Michael Menjivar) Users will be able to save their login information on the login page to avoid typing their credentials each time they sign in.
20. (Michael Menjivar) Users will be able to log out of their account.
21. (Michael Menjivar) Users will be able to create an account.
22. (Michael Menjivar) Users will be able to delete their account.
23. (Michael Menjivar) Users will be able to download their data
24. (Michael Menjivar) Users will be able to switch their accounts between public and private (i.e., whether or not other members can see their profile).
25. (Victoria Gammenthaler) Users will be able to view other users' information that is made public to them.

26. (Victoria Gammenthaler) Users will be able to link with friends on their social media accounts.
27. (Victoria Gammenthaler) Users will be able to block certain people from being their linked friend.
28. (Victoria Gammenthaler) Users will be able to view linked friends on their account.
29. (Victoria Gammenthaler) Users will be able to go directly to their linked friend's information through a linked friends list.
30. (Sreya Nagumalla) Users will be able to change account settings
31. (Sreya Nagumalla) Users will be able to view a signed out version of the application
32. (Sreya Nagumalla) Users will be able to view menu to filter search results
33. (Sreya Nagumalla) Users will be able to check and uncheck filter options
34. (Sreya Nagumalla) Users will be able to view other user's topics & comments as a list
35. (Sreya Nagumalla) Users will be able to view graphs in a grid format

## Non-functional Requirements

1. (lisa chen) The application should be able to run on a PC, IOS, and Android OS browser.
2. (lisa chen) The application should be able to log users in within 5 seconds
3. (Michael Stinnett) The application should be online 99% of the time.
4. (Michael Stinnett) The application should have a mobile friendly version. .
5. (Tyler Mooney) The application should load any page in under 5 seconds
6. (Tyler Mooney) The application should load any search result in under 3 seconds
7. (Michael Menjivar) The application should be able to sign a user out in under 5 seconds.
8. (Michael Menjivar) The application should be user friendly and easy to use.
9. (Victoria Gammenthaler) The application should be readable in PC and mobile versions.
10. (Victoria Gammenthaler) The application's font and format should look professional.
11. (Sreya Nagumalla) The application should be able to create an account after use inputs needed information in under 5 seconds
12. (Sreya Nagumalla) The application should be able to update account settings in under 5 seconds

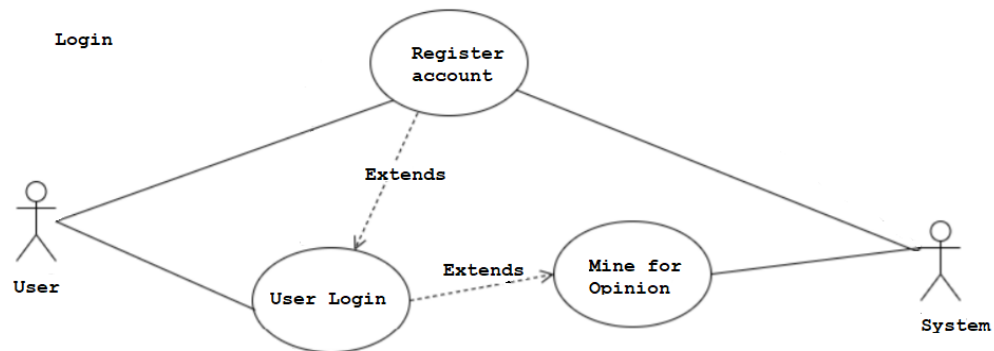
## Site Map



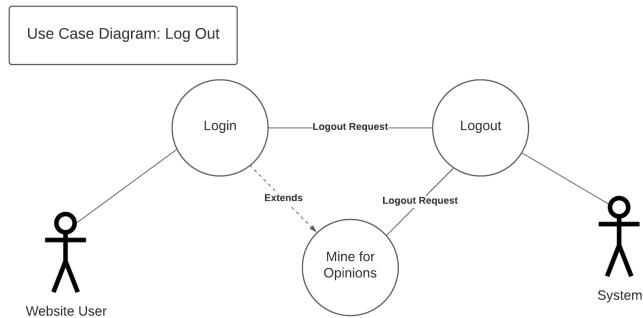


# Use Case Diagrams

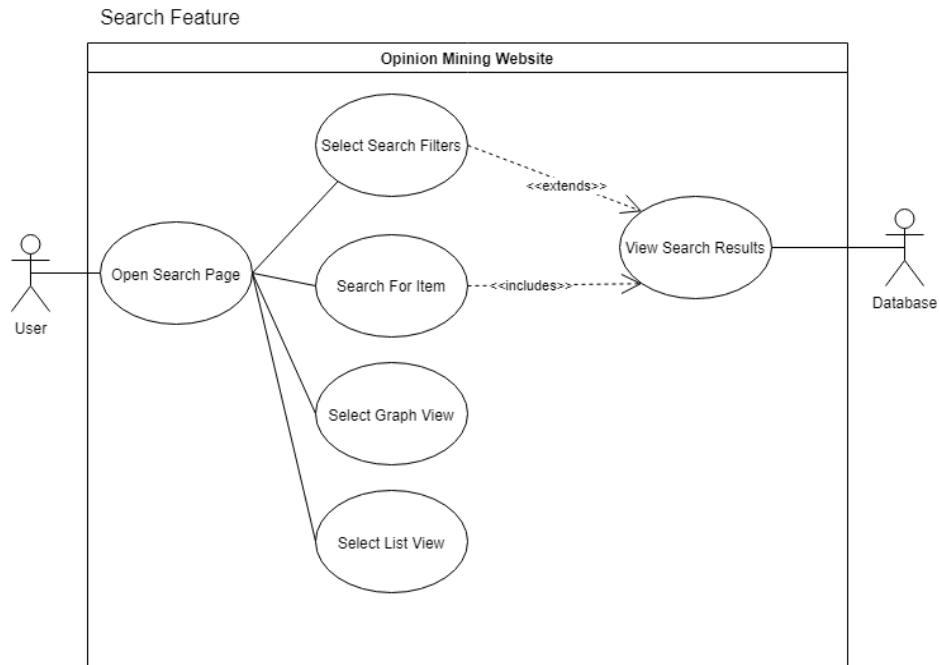
Lisa Chen: Login



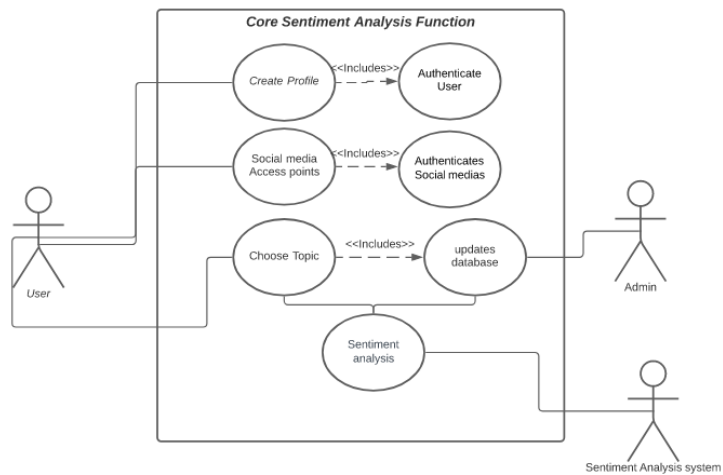
Michael Menjivar: Log Out



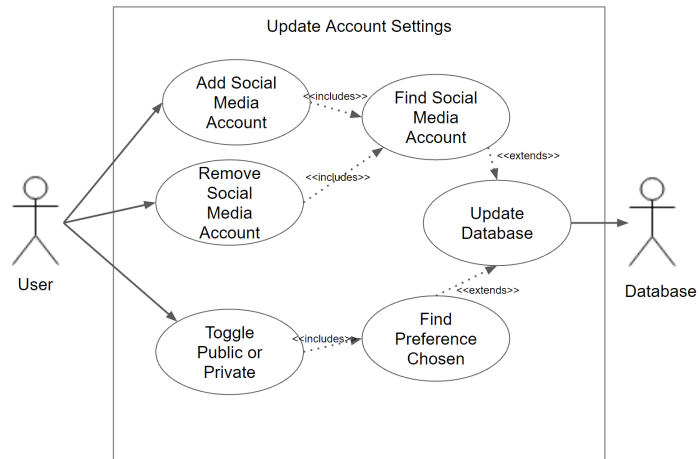
Tyler Mooney: Search



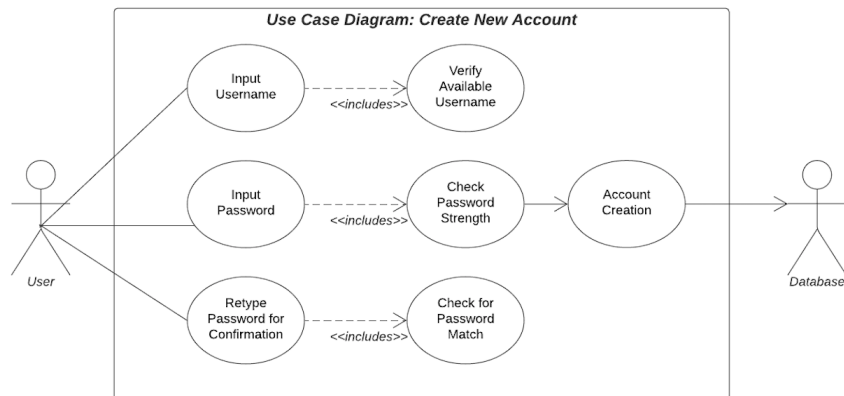
Michael Stinnett: Core Sentiment Analysis Function



Victoria Gammenthaler: Update Account Settings

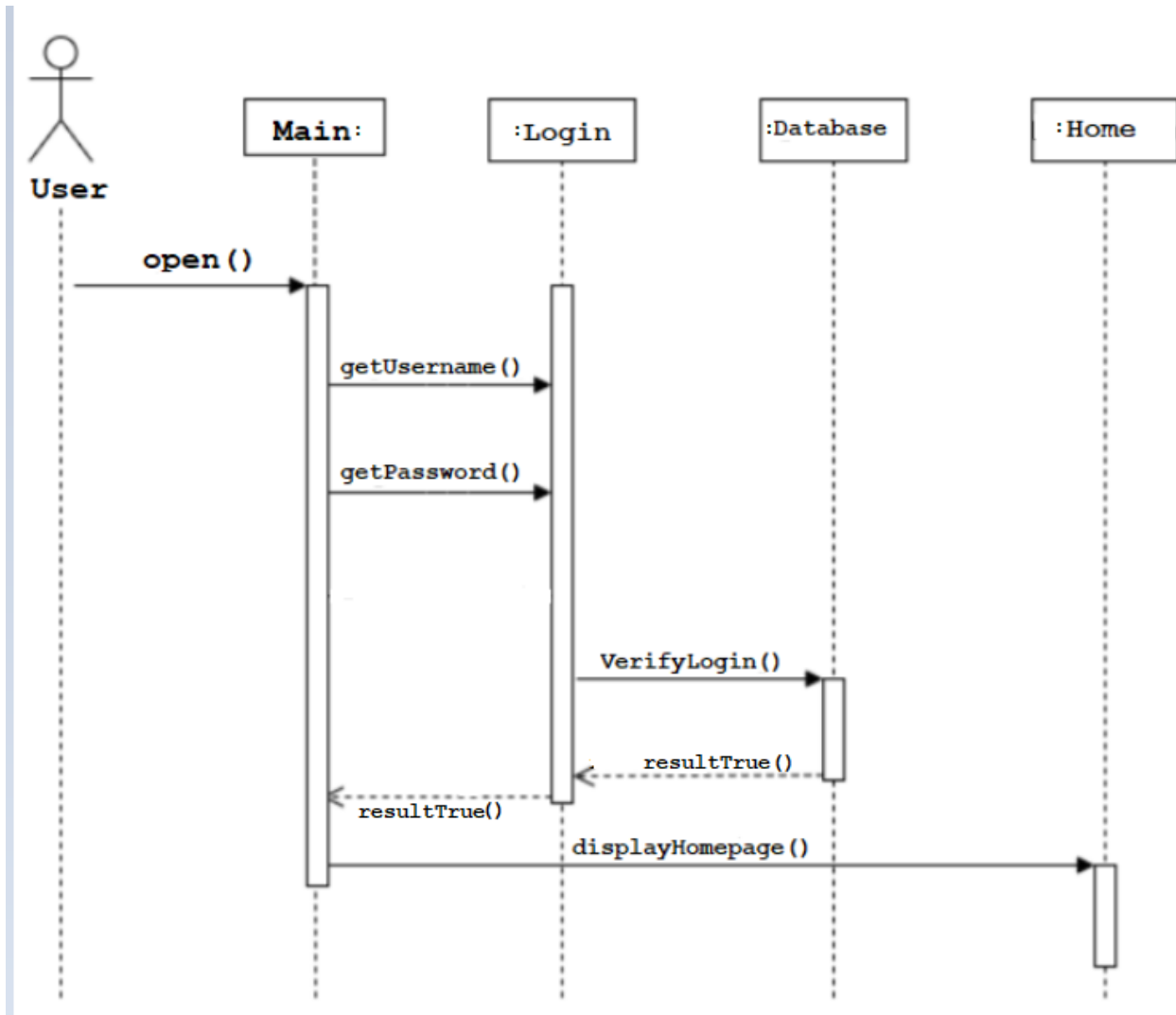


### Sreya Nagumalla: Create New Account



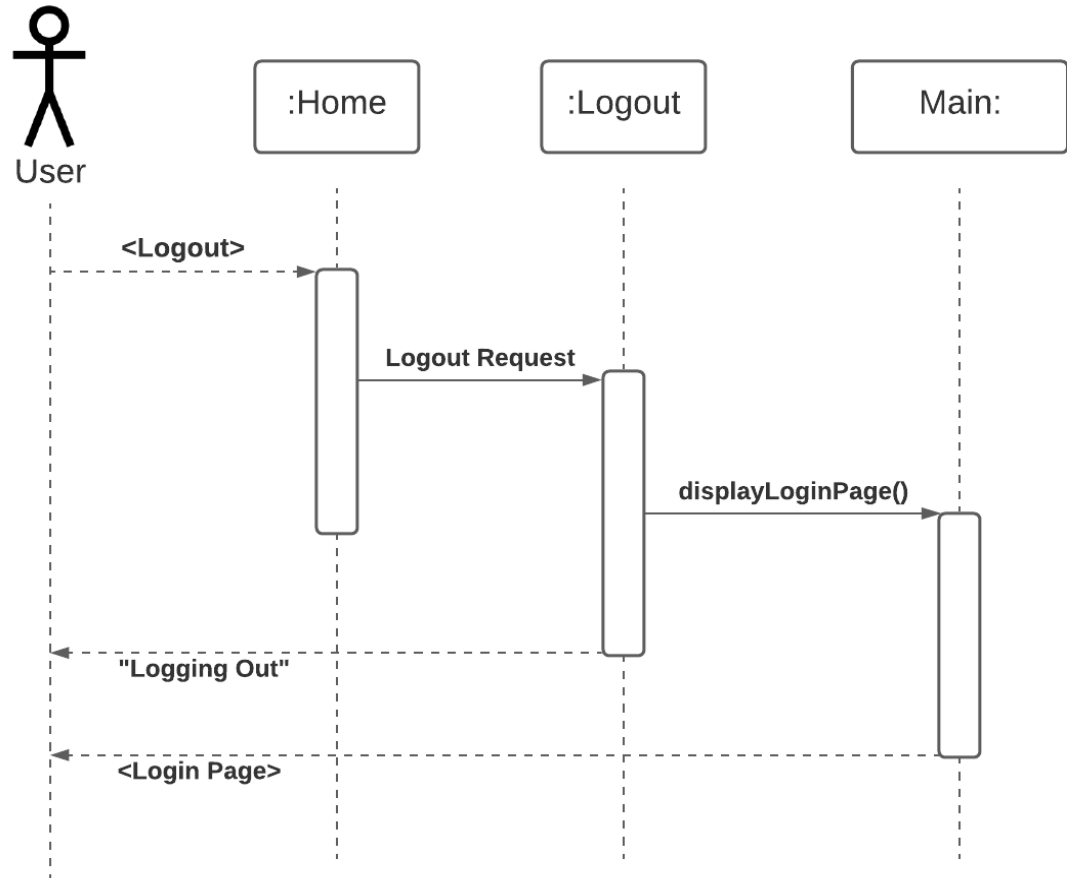
# Sequence Diagrams

Lisa Chen: Login

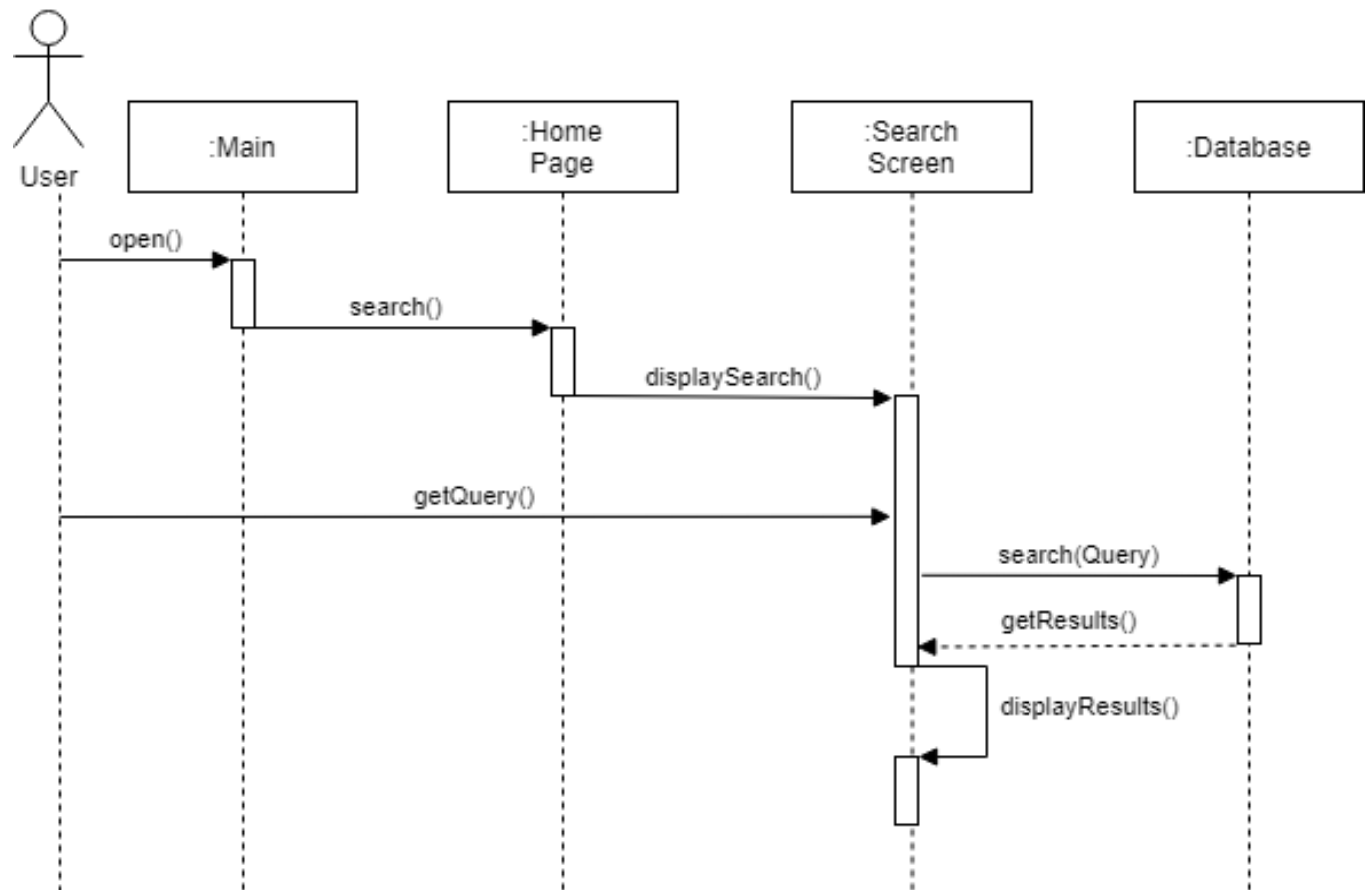


Michael Menjivar: Logout

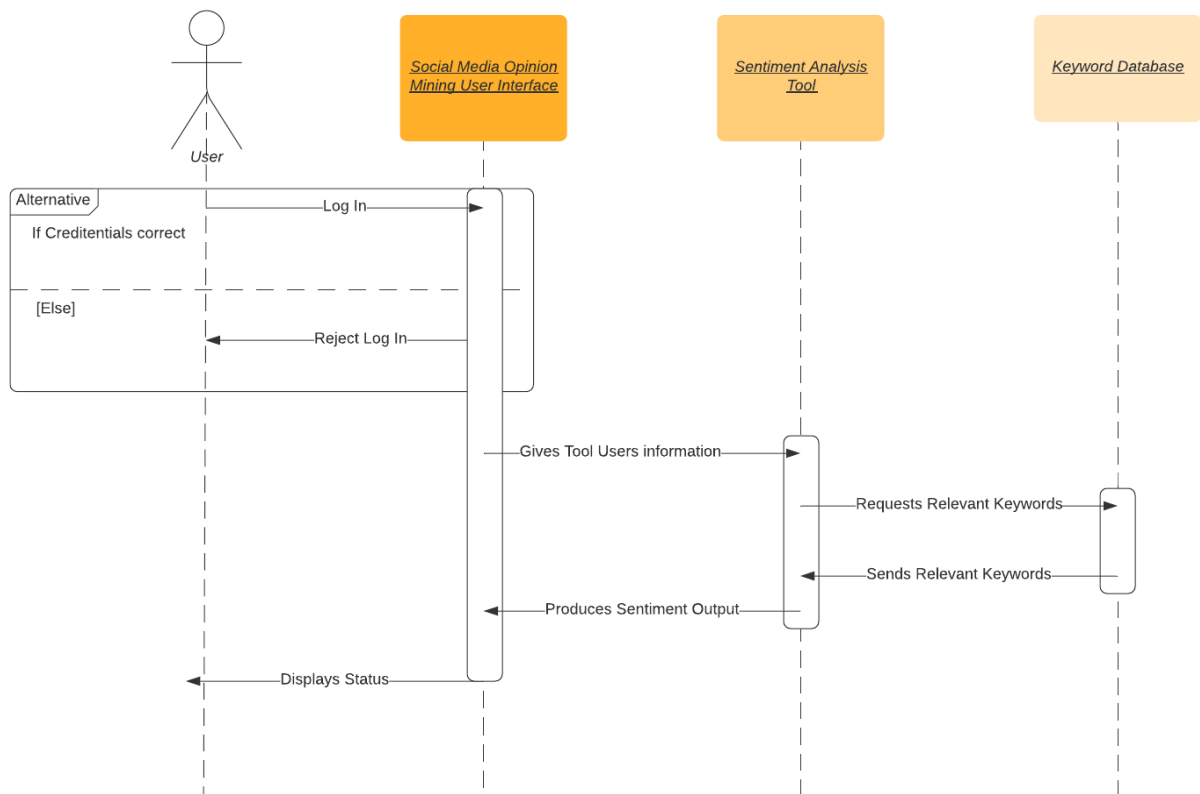
## Sequence Diagram: Log Out



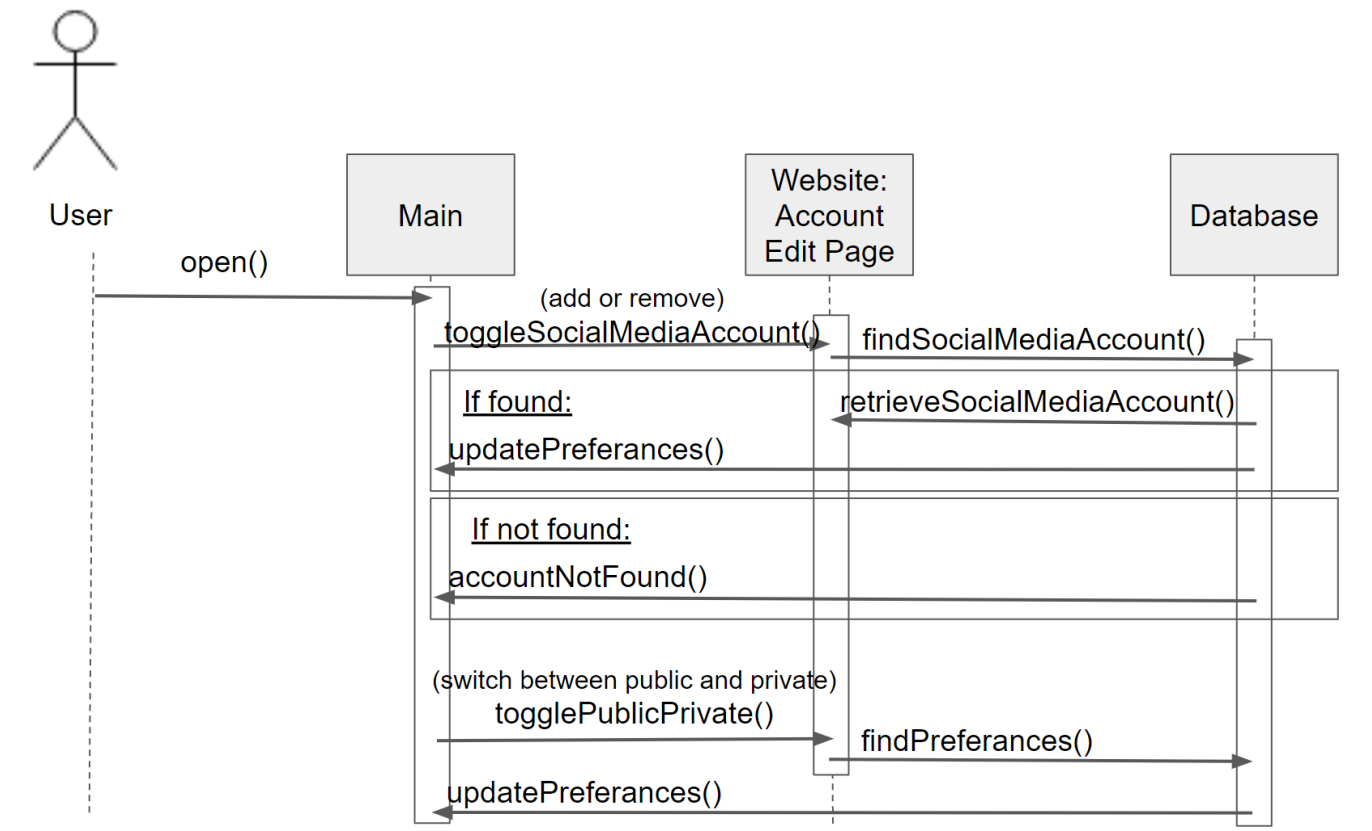
Tyler Mooney: Search  
Search Feature



## Michael Stinnet: Core Sentiment Analysis Function

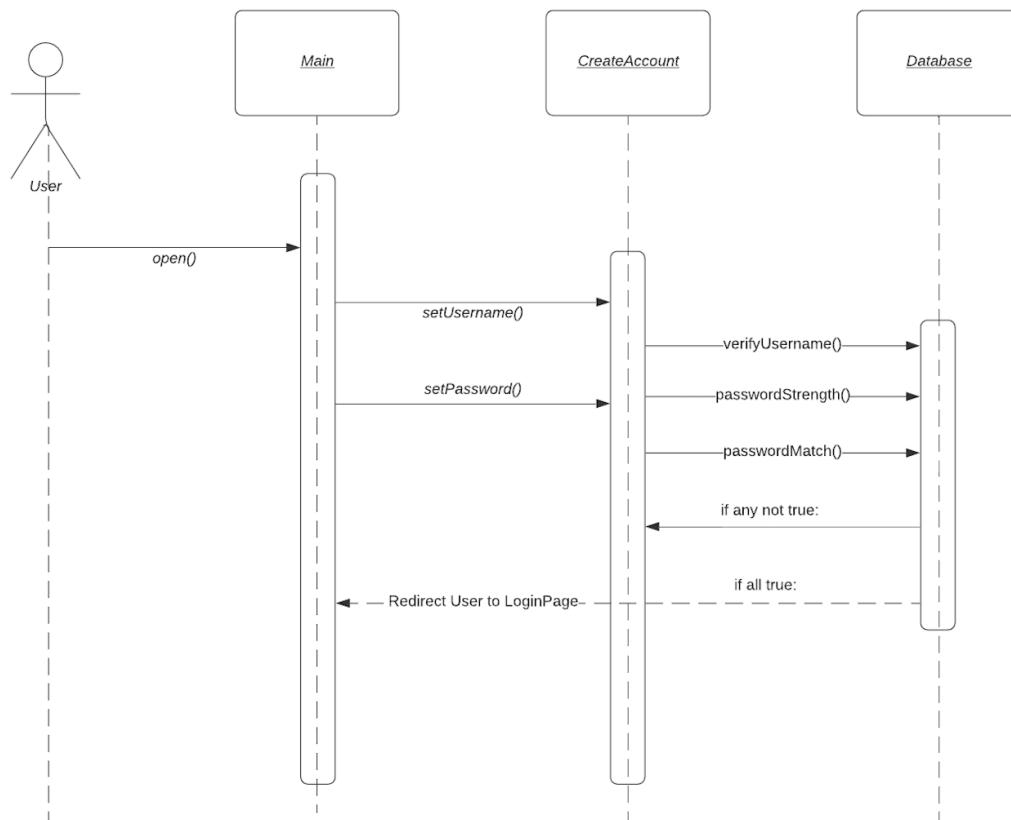


## Victoria Gammenthaler: Update Account Settings





## Sreya Nagumalla: Create New Account



# Wire Frames

## Log-In

(Michael Menjivar)

Page 1

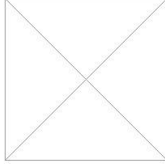
https://www.default.com

Opinion Mining Website Name

Subtitle Here

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

Sed ut perspiciatis unde omnis iste natus error sit voluptatem accusantium doloremque laudantium, totam rem aperiam, eaque ipsa quae ab illo inventore veritatis et quasi architecto beatae vitae dicta sunt explicabo.



Username:

Password:

Log In

Some default text to fill some space, and something more so there is more text

Some default text to fill some space, and something more so there is more text

Some default text to fill some space, and something more so there is more text

Some default text to fill some space, and something more so there is more text

Sign Up for a Free Account Here:

Create New Account

Sed ut perspiciatis unde omnis iste natus error sit voluptatem accusantium doloremque laudantium, totam rem aperiam, eaque ipsa quae ab illo inventore veritatis et quasi architecto beatae vitae dicta sunt explicabo.

## Create Account

(Michael Menjivar)

Page 1

https://www.default.com

Opinion Mining Website Name

Create Account

First Name:

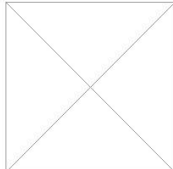
Last Name:

Email Address:

User Name:

Password:

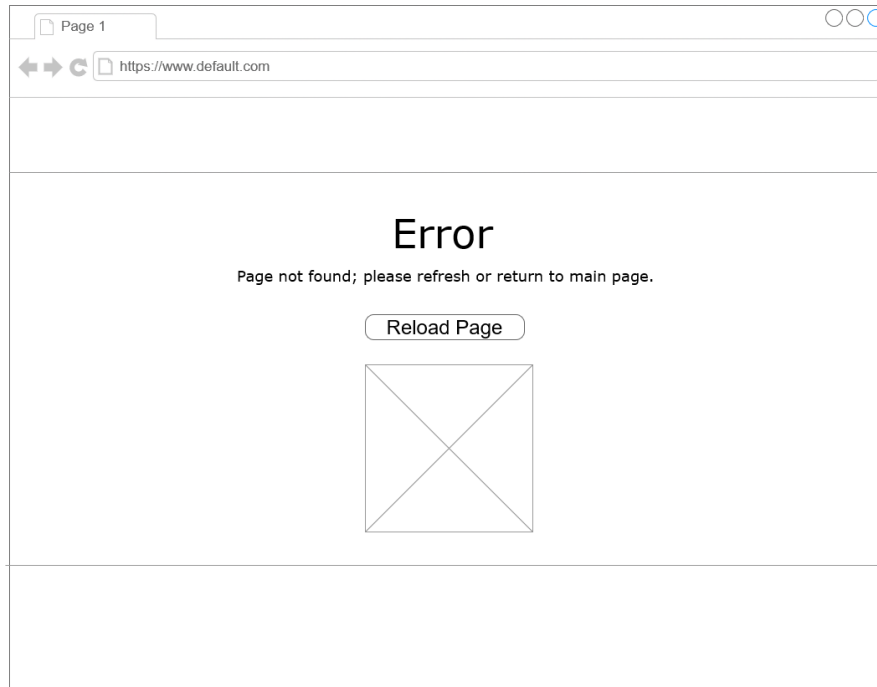
Re-Enter Password:



Submit

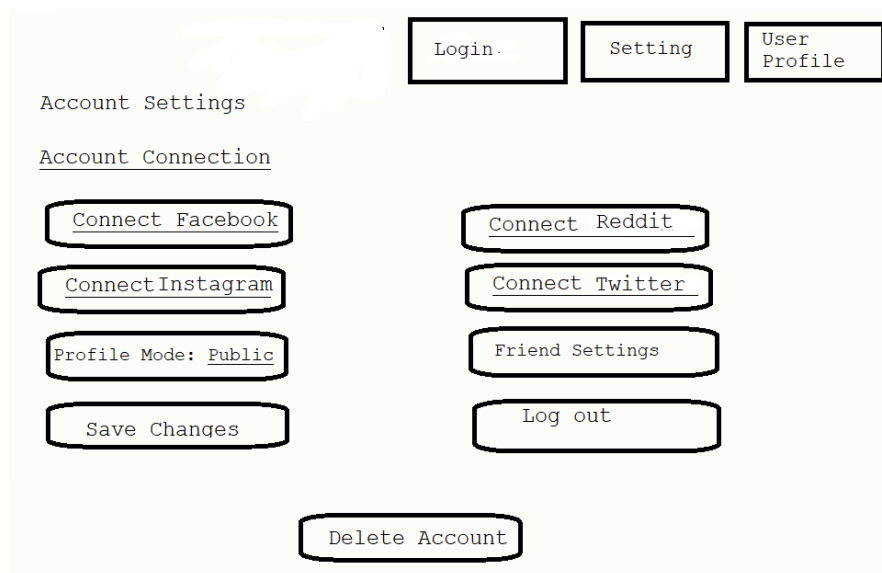
## Page Error

(Michael Menjivar)



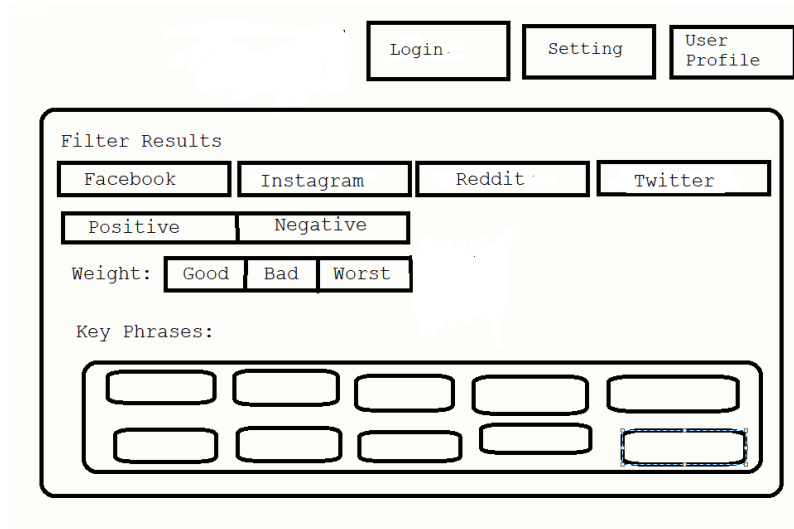
## Privacy Account Settings

(Lisa Chen)



## Filter Search Results Menu

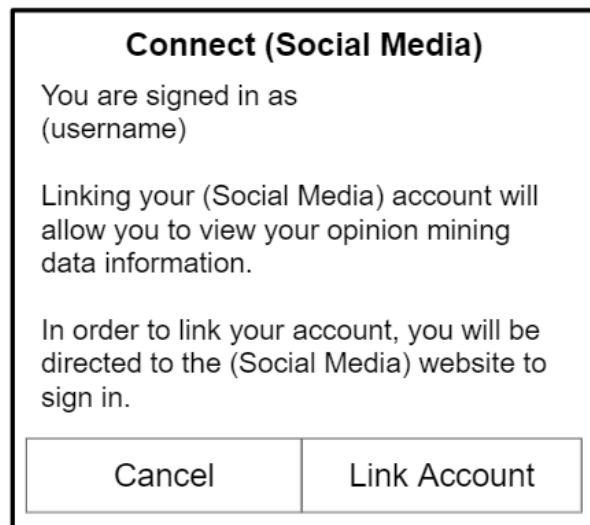
(Lisa Chen)



The image shows a web interface for filtering search results. At the top right, there are three buttons: 'Login', 'Setting', and 'User Profile'. Below these is a 'Filter Results' section. It contains four buttons for social media platforms: 'Facebook', 'Instagram', 'Reddit', and 'Twitter'. Below these are two buttons for sentiment: 'Positive' and 'Negative'. Below those are three buttons for weight: 'Good', 'Bad', and 'Worst'. At the bottom of the filter section is a label 'Key Phrases:' followed by a grid of ten empty rectangular input boxes arranged in two rows of five.

## Connect Social Media

(Victoria Gammenthaler)



The image shows a dialog box titled 'Connect (Social Media)'. The text inside reads: 'You are signed in as (username)', 'Linking your (Social Media) account will allow you to view your opinion mining data information.', and 'In order to link your account, you will be directed to the (Social Media) website to sign in.' At the bottom, there are two buttons: 'Cancel' and 'Link Account'.

# Change Profile Mode

(Victoria Gammenthaler)

**Change to Public?**

Other users can now view your information.  
Tap Confirm to continue and Save Changes to apply changes.

Cancel

Confirm

# Homepage

(Tyler Mooney)

LOGO

Search

Profile/Login Button

Trending Topics

Topic #1

Opinion Graph

Topic #2

Opinion Graph

Topic #3

Opinion Graph

Arrow Button

Trending Posts

Related Topic

Post Preview

Related Topic

Post Preview

Icon of related platform

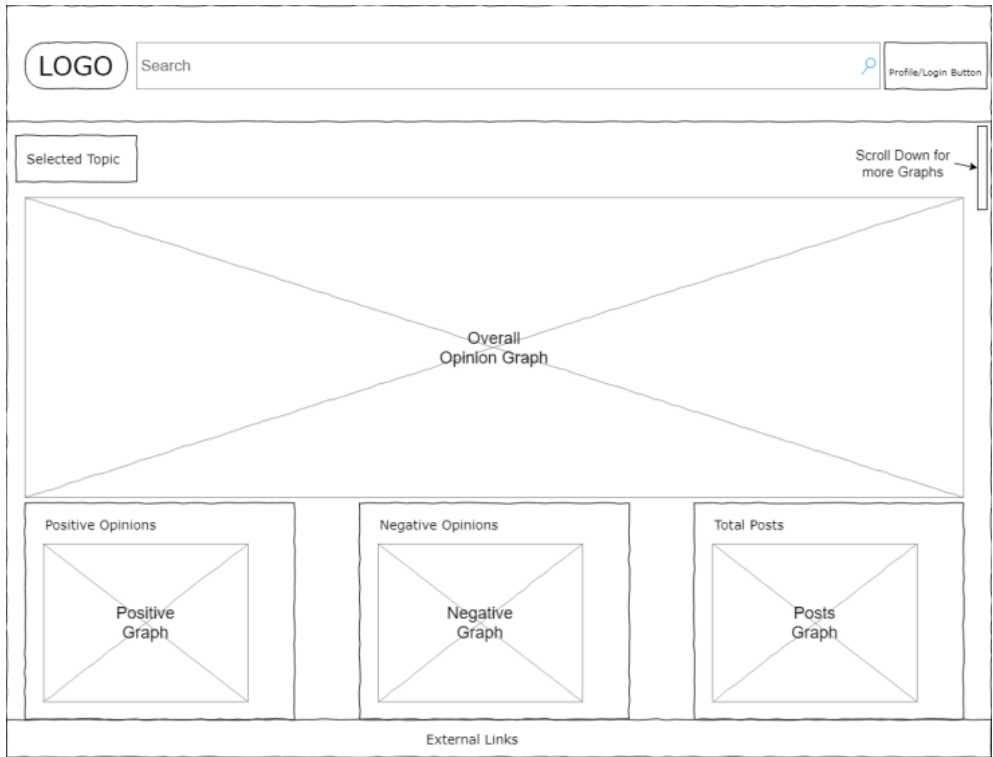
Related Topic

Post Preview

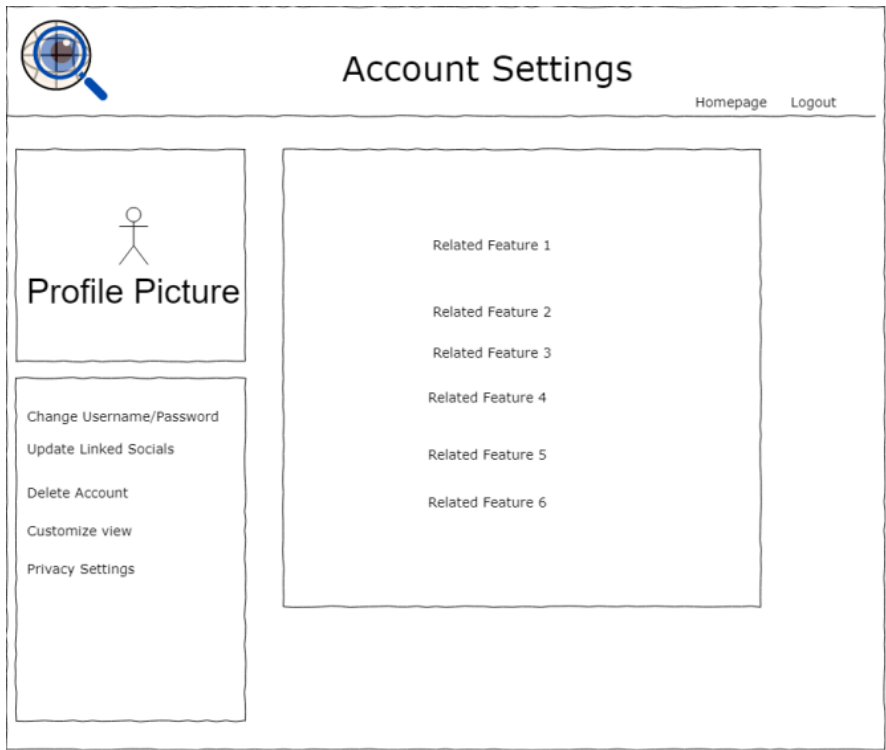
Arrow Button

External Links

Topic Data View  
(Tyler Mooney)

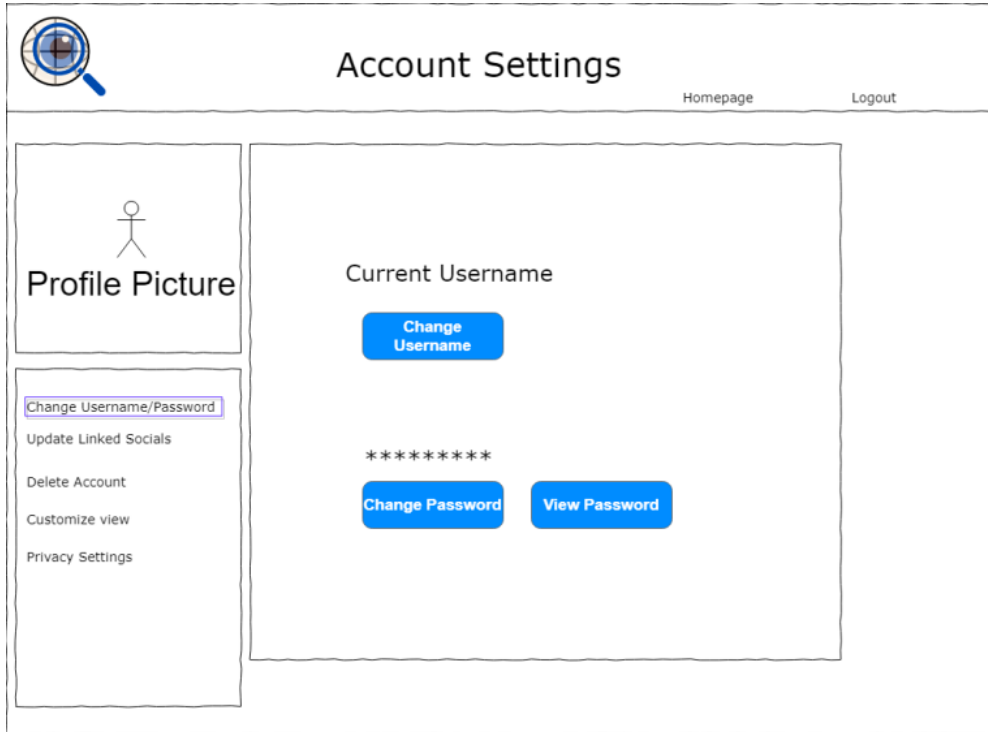


Account Settings Wireframe  
(Michael Stinnett)



## Change Username/Password

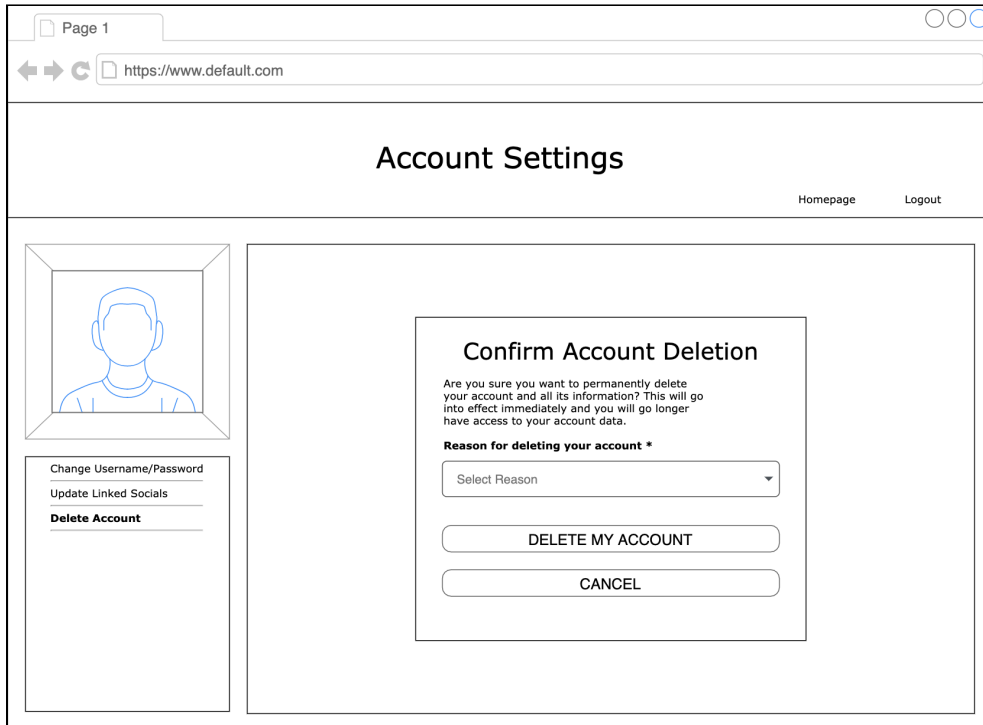
(Michael Stinnett)



The screenshot shows a web application titled "Account Settings". In the top left corner is a magnifying glass icon. The top right corner contains links for "Homepage" and "Logout". On the left side, there is a sidebar with a "Profile Picture" section (indicated by a stick figure icon) and a list of settings: "Change Username/Password" (highlighted with a red border), "Update Linked Socials", "Delete Account", "Customize view", and "Privacy Settings". The main content area on the right is titled "Current Username" and features a blue "Change Username" button. Below this, there is a section for password management, indicated by a series of asterisks "\*\*\*\*\*", with blue buttons for "Change Password" and "View Password".

## Delete Account Confirmation

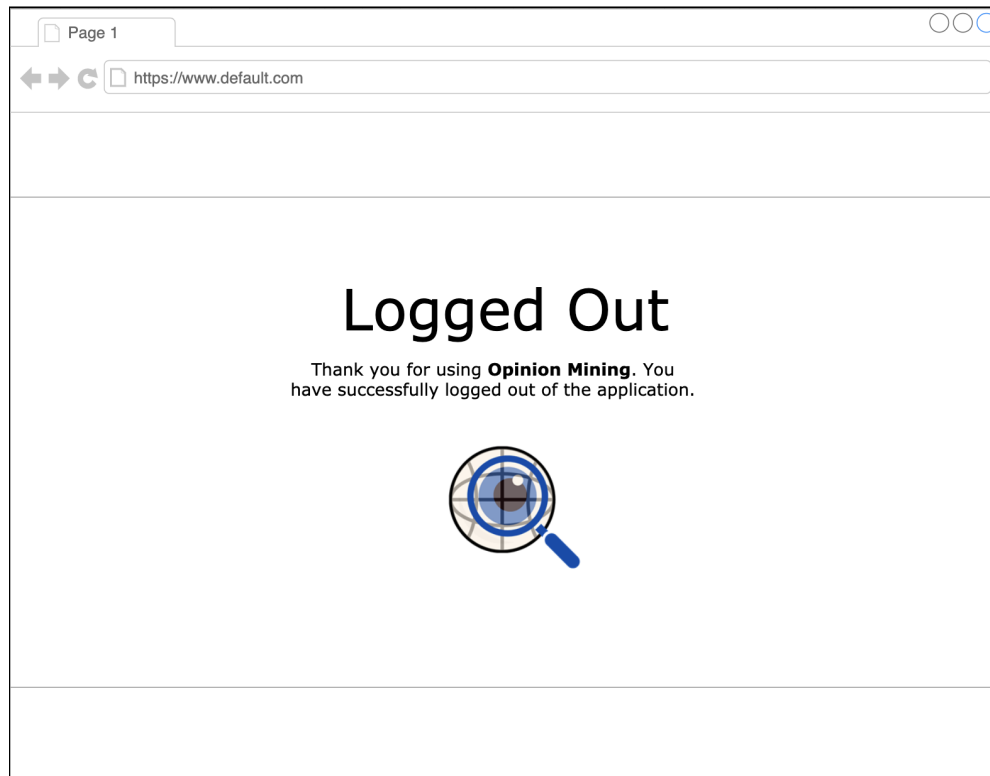
(Sreya Nagumalla)



The screenshot shows a web browser window with the address bar displaying "https://www.default.com". The page title is "Page 1". The main content area is titled "Account Settings" and includes "Homepage" and "Logout" links. On the left sidebar, the "Delete Account" option is highlighted with a red border. The main content area displays a "Confirm Account Deletion" dialog box. The dialog box contains the text: "Are you sure you want to permanently delete your account and all its information? This will go into effect immediately and you will no longer have access to your account data." Below this text is a dropdown menu labeled "Reason for deleting your account \*" with the option "Select Reason" visible. At the bottom of the dialog box are two buttons: "DELETE MY ACCOUNT" and "CANCEL".

## Logout Confirmation

(Sreya Nagumalla)

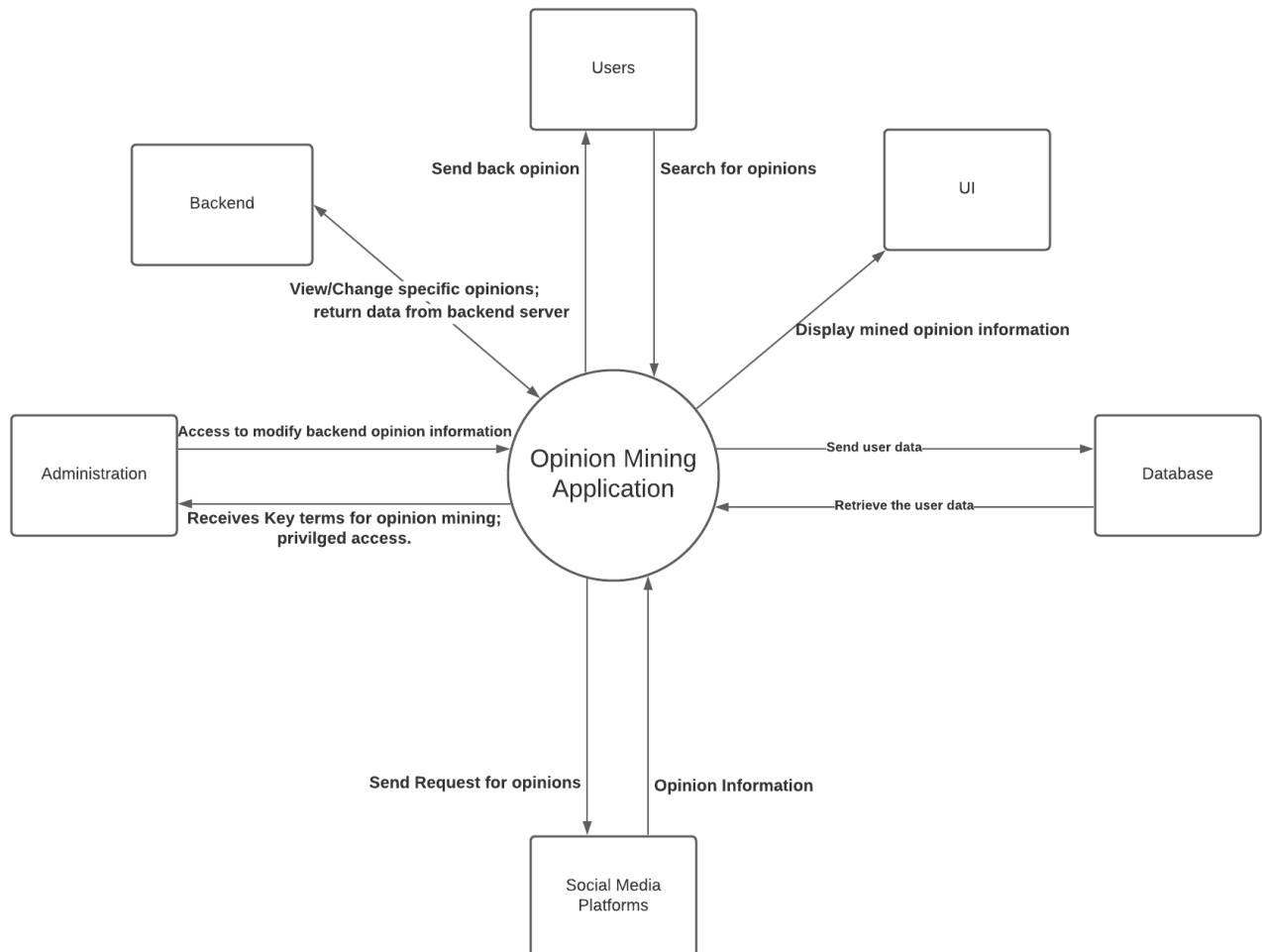




# Architecture Design

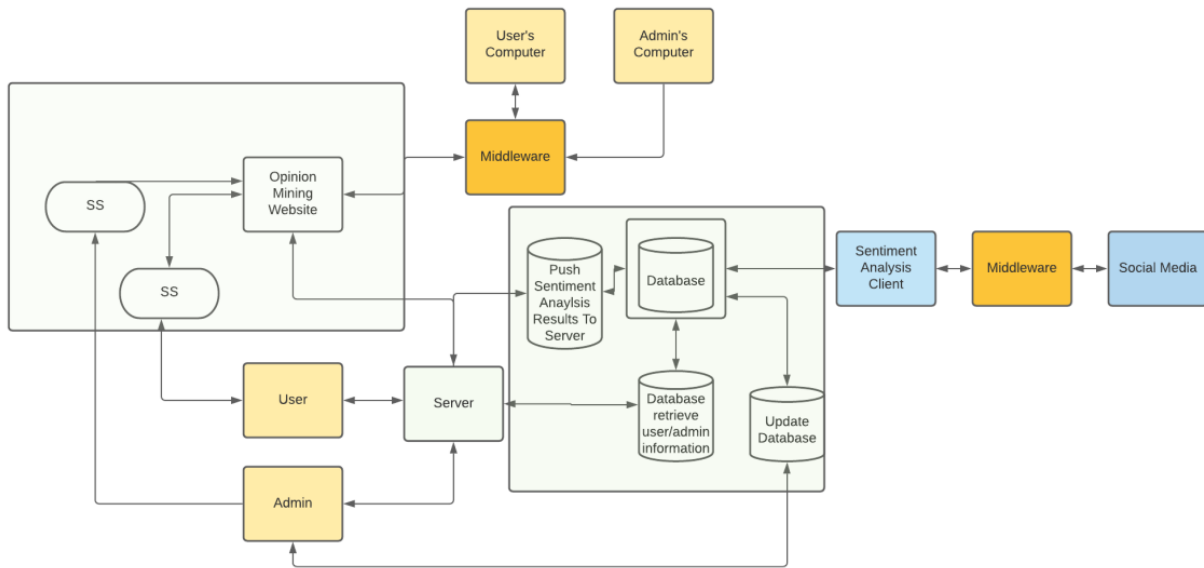
## Context Diagram

(Michael Menjivar, Sreya Nagumalla)



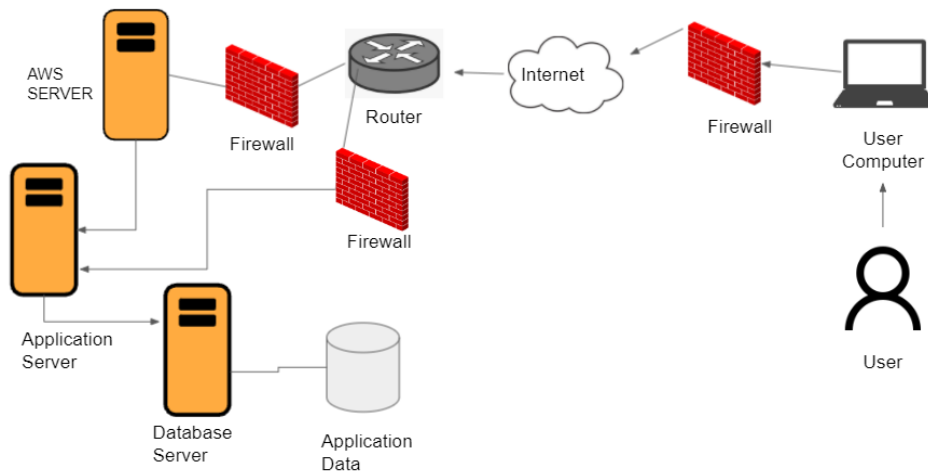
## System Architecture (Logical View)

(Michael Stinnett, Tyler Mooney)

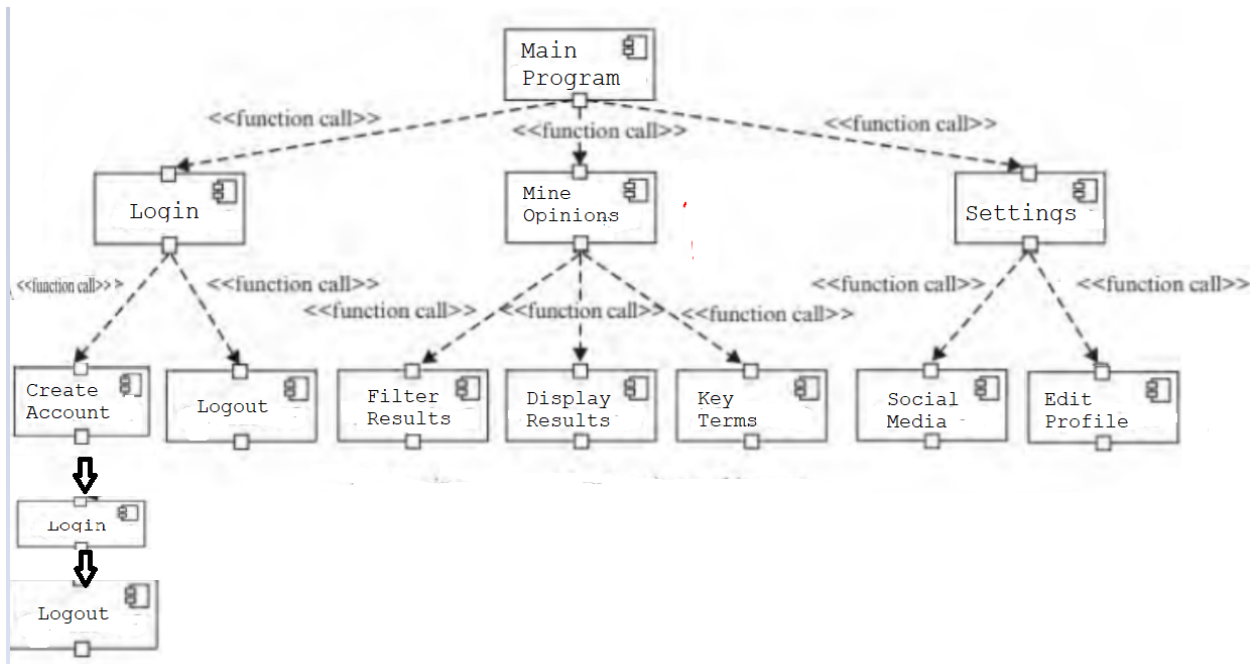


## System Architecture (Physical View)

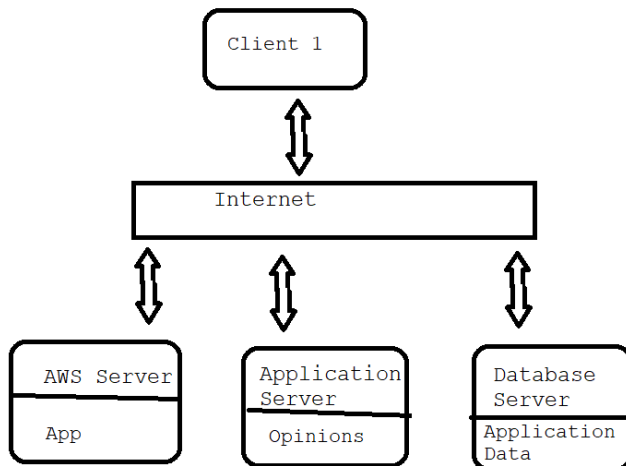
(Lisa Chen and Victoria Gammenthaler)



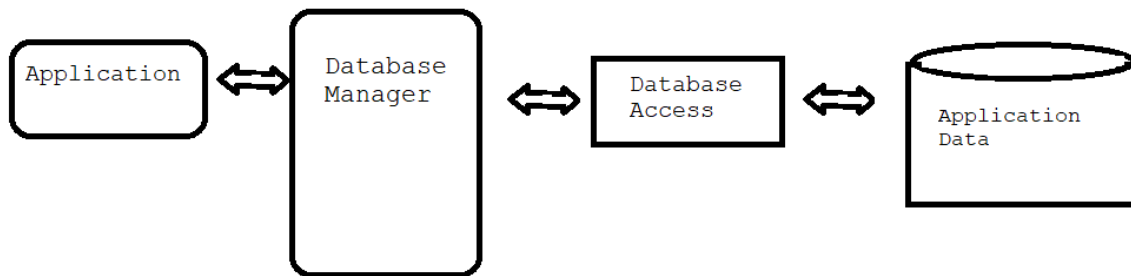
## Architecture Diagram



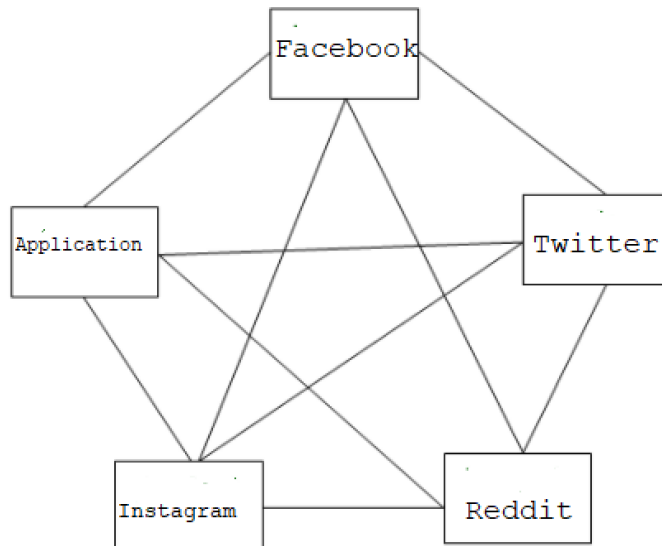
Style Used: Main Program & Subroutines



Style Used: Client Server



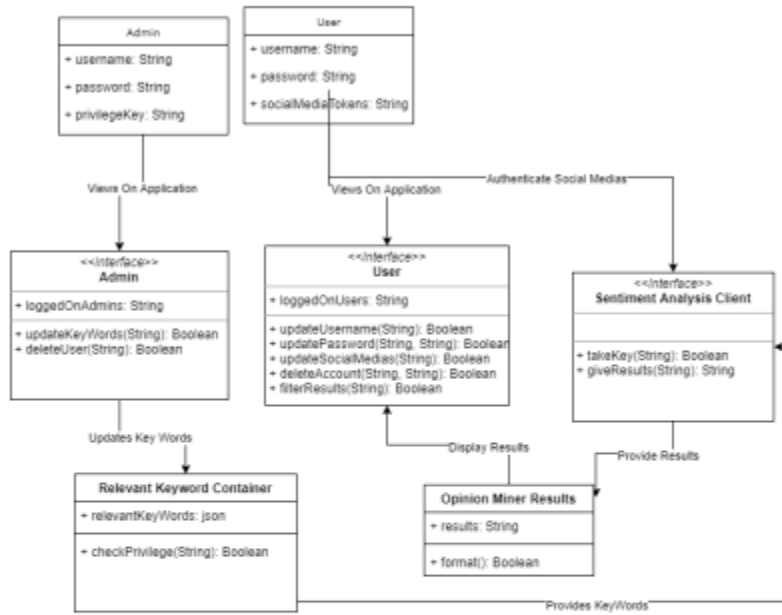
Style Used: Persistence Framework



Style Used: Peer to Peer

# UML Diagram & Associations

Opinion  
Miner



# **Implementation**

## **Development Research**

Scrum is a development strategy used in software development that can act as a framework adaptable to any scope of product development. This development strategy has a two week development cycle, aka sprints, with quick regular meetings amongst the team. Scrum is useful for the development of a product that requires quick adaptability to a change of requirements. This development strategy allows for a high quality, low risk product to be produced in a shorter amount of time with feedback given early and regularly. However, Scrum is dependent on small teams being able to work quickly and any loss of a team member impacts the project's progress. Scrum is a subset of a software development strategy known as Agile. Agile development is used to minimize risk when adding new functionality, where teams develop the project in iterations of completing small increments of the needed functionality. Doing this improves efficiency with corrections made early on. However, Agile is dependent on consistent communication, team member's time commitment, and is labor intensive.

## **Development Plan**

The coding will be done with the primary purpose of setting up a functional website. The reason we are only working towards a website is because the large amount of data that will need to be handled and viewed in a digestible manner by users would be difficult to present on the smaller screens of mobile devices. The front end development of the application will use HTML, CSS, and Javascript. These languages are the basis of many websites already in use and the plethora of information out there on how to utilize them is crucial in allowing for the quick development of the application. The back end development of the website will use Javascript and FeathersJS because in order to handle the large amounts of data for the various graphs and statistics of the opinion mining, there will have to be a language and a framework that makes the process of converting said data into graphs and statistics seamless.

The unit testing will be handled as sprints are happening to ensure that progress being made won't affect the team's ability to accomplish goals in time. The testing will primarily be based on the black box testing and white box testing methodology where the testing will be done with and without knowledge of the code to ensure that debugging is done properly. That way in the end, the various functionalities of the website will work properly with each other in the present and into the future.

## **Software Testing**

The process our team went through to verify the functionality of our product was driven in large part by thinking about the path a user would take to actually utilize the product. We brainstormed several ways an end user could traverse the application, from login to logout. It was important to understand how users interact with web applications to not only decide what functional and non-functional requirements were needed, but to also make our product full-proof to intentional and unintentional actions made by the user as well as tampering.

## Functional Test Cases

Number	Name	Type	Execution	Acceptance Criteria
F1 (Lisa Chen)	Sign in Test	Functional 1	Sign in with each combination of right and wrong password and username.	Fail for all combinations except for the right username and password.
F2 (Lisa Chen)	Account Settings Test	Functional 6	Sign in and click the settings icon.	All settings are displayed correctly.
F3 (Michael Stinnett)	Social Media Test	Functional 7	At account creation or in the account settings page, click on the respective social media connect button, and sign into the service with incorrect and correct credentials.	Services correctly authenticate all accounts.



F4 (Michael Stinnett)	Feedback Test	Functional 11	When the cursor is hovering over a section of text that was tagged as being weighed, a context popup will appear with a button that takes the user to the comment section on that text. Click on leave a new comment.	Context menu pops up. Comment page is found. Feedback comment box takes input. Admin receives the comment and what text the comment was on.
F5 (Michael Stinnett)	View others Feedback test	Functional 10	When the cursor is hovering over a section of text that was tagged as being weighed, a context popup will appear with a button that takes the user to the comment section on that text.	Context menu pops up. Comment page is found. Older comments are shown on that text with timestamps.
F6 (Tyler Mooney)	Profile Page test	Functional 13	Sign in and click on the profile page.	All related profiles to the user are displayed correctly.

F7 (Tyler Mooney)	Disconnect Social Medias Test	Functional 14	Sign in and click the account settings page, click remove button next to respective social media site.	Remove is successful. There is no longer analysis from that social media site in the main status page.
F8 (Tyler Mooney)	Filter by Social Media Test	Functional 15	Uncheck or check the respective social media at the top of the main status page.	Status feed no longer shows output from the unchecked social media. Status feed shows all output from the checked social media.
F9 (Michael Menjivar)	Save login info Test	Functional 19	Login one time and check the save in login info. Visit the website again.	Login information is saved from the last login exactly as it was.
F10 (Michael Menjivar)	Log out Test	Functional 20	Click the logout button.	The login page is displayed.
F11 (Michael Menjivar)	Delete Test	Functional 22	Click the delete account button. Press yes on the are you sure prompt.	The login page is displayed and using the credentials of the deleted account does not authenticate.

F12 (Michael Menjivar)	Private Test	Functional 23	Click the private on or off switch on the account settings page.	If private is on, then their feedback comments will not appear to other users. If private is off, then their feedback comments will appear to other users.
F13 (Victoria Gamment haler)	View linked friends Test	Functional 27	Press friends icon.	Displays linked friends.
F14 (Victoria Gamment haler)	Friends Information Test	Functional 28	Press friends icon. Press friend from list.	Displays relevant friend information.
F15 (Sreya Nagumall a)	Change Account Settings Test	Functional 29	Select a setting and change it on the account page.	The account settings page should be updated with the respective change that has been made.
F16 (Sreya Nagumall a)	Topics/Comments View Test	Functional 33	Sign in and navigate to the user topics and related comments page.	The user page should display topics and comments in a list format.

## Non-Functional Test Cases

Number	Name	Type	Execution	Acceptance Criteria
NF1 (Lisa Chen)	Portability Test	Non-Functional 1	Visit all application pages on PC, IOS, and Android OS Browsers.	All pages are displayed correctly on all operating systems on all browsers.
NF2 (Lisa Chen)	Time to Log in Test	Non-Functional 2	Log in to the application.	The log in time takes no longer than 5 seconds.
NF3 (Michael Stinnett)	Uptime Test	Non-Functional 3	Use any part of the application.	Every part should be online 99% of the time.
NF4 (Michael Stinnett)	Mobile Friendly Test	Non-Functional 4	Use the application on a mobile device.	The application should fit neatly to mobile screens to be used seamlessly.
NF5 (Tyler Mooney)	Page Load time Test	Non-Functional 5	Click any page.	The page should take no longer than 5 seconds to load.
NF6 (Tyler Mooney)	Search result time test	Non-Functional 6	Use the search function.	All results should display in under 3 seconds.
NF7 (Michael Menivar)	Sign out test	Non-Functional 7	Sign out of the application.	The sign out should take no longer than 5 seconds.

NF8 (Michael Menjivar)	User friendly Test	Non-Functional 8	Navigate through all parts of the application seamlessly.	Any user that navigates through the app should have no problem understanding what is being shown to them and how to use it.
NF9 (Victoria Gammenthaler)	Readability Test	Non-Functional 9	Read all parts of the application.	All parts of the application should be readable and have no overlapping words, tiny words, or overly large words.
NF10 (Victoria Gammenthaler)	Font Professionalism Test	Non-Functional 10	Read all parts of the application.	All parts of the application should have professional phrasing, font, and format.
NF11 (Sreya Nagumalla)	Account Creation Test	Non-Functional 11	Create a new account.	The new account creation should take no longer than 5 seconds.
NF12 (Sreya Nagumalla)	Update Account Settings Test	Non-Functional 12	Update any account setting.	The account setting update should take no longer than 5 seconds to process.

## Requirements Traceability Matrix (RTM)

## Functional Requirements

[illegible]

## Non-functional Requirements

[illegible]

# Deployment

Scrum is a deployment strategy used in software development that can act as a framework adaptable to any scope of product development. This development strategy has a two week development cycle, aka sprints, with quick regular meetings amongst the team. Scrum is useful for the development of a product that requires quick adaptability to a change of requirements. This development strategy allows for a high quality, low risk product to be produced in a shorter amount of time with feedback given early and regularly. However, Scrum is dependent on small teams being able to work quickly and any loss of a team member impacts the project's progress. Scrum is a subset of a software development strategy known as Agile. Agile development is used to minimize risk when adding new functionality, where teams develop the project in iterations of completing small increments of the needed functionality. Doing this improves efficiency with corrections made early on. However, Agile is dependent on consistent communication, team member's time commitment, and is labor intensive.

## Deployment Plan

1. The source code for this project is stored on github and the code stored here should be downloaded.
2. This project uses Feathers, an open source web framework for building modern real-time applications. Feathers, along with NodeJS and npm should be installed.
3. Following this, the user will install their dependencies using:

```
cd path/to/opinion-miner  
npm install
```

4. Once this is done, the user can start the ap with:

```
npm start
```

5. Simply run **npm test** and all your tests in the **test/** directory will be run.
6. Instead of these instructions, you can also just click the website link that's on our powerpoint underneath the github link or just this one:
  - <https://opinion-miner-331800.appspot.com/>

### Subsequent Deployments Procedure:

1. Continually monitor that servers and databases stay connected as website is running
2. Update the application as soon as changes are made to the source code on github

## Test Results

Execute 20 test cases for functional requirements

Document results of the test case as part of the Test Case Plan

Test Cases	Inputs	Expected Outputs	Actual Outputs	TA Output
Login	Type username and password inputs, and press the login button.	User is redirected to the homepage of the website.	User is redirected to the homepage of the website.	
Logout	Click the logout button	User is redirected to the login page.	User is redirected to the login page	
Create Account	Enter the information that is requested by the website	User is redirected to the homepage of the website.	User is redirected to the homepage of the website.	
Update Setting	Changes current settings and click the Confirm Settings	User is redirected to the Settings page, and the setting is updated.	User is redirected to the Settings page, and the setting is updated.	
Delete Account	Press the delete account button.	User is redirected to the sign in page.	User is redirected to the sign in page.	
Go to Login Page	Click hyperlink for website	User is redirected to the sign in page.	User is redirected to the sign in page.	
See search results	Type something into search bar and press enter	A list of results for the searched terms	Nothing shows up since the search engine is not functional	
Go to User Settings	Press "Settings" Button	Redirect to User Settings page	Redirects User to Settings page	
Switch	Click the "Make	Switch checkbox	Checkbox	



account between Public and Private	Account Private” Checkbox	from unchecked to checked (switch from public to private) if unchecked, and switch from checked to unchecked (switch from private to public) if checked	switches, but account is not switch between public and private	
Save login info	Click “Save Login Info” checkbox	Save user information at login if checked, and stop saving user information if unchecked	Does not save user information at login if checked	
View Logout Confirmation Page	Click the logout button after you have been signed in	Displays Logout confirmation page	Does not display logout confirmation	
View other Public Profiles	Click someone’s Public Profile	Display profile information for said user	Does not display user information (because there are no other users)	
Invalid Login	Type invalid username and password inputs, and press the login button.	User stays on the login page of the website, and an error message pops up.	User stays on the login page of the website, and an error message pops up.	
Link social media account	Click any of the “Link” buttons in the settings page	Redirect to login page for corresponding social media account	Redirects to error page	
Block user	Click “Block” on user profile	Block said user from viewing your profile	Does not block user (no users and no block	

			button)	
Go to linked account profile page	Click "Profile Page"	Redirect to page with all linked account profile information	Does not redirect to page (no profile page)	
Filter search results	Choose filter options and click "Confirm"	Filters search results by filter options	Does not filter search results (no search engine)	
Unlink Social Media accounts	Click on the "link button" in the settings page to disconnect the social media account after having connected a social media	Social Media is disconnected and redirected to disconnect social media page.	Redirect to the error page	
View Trending Topics	Click "Trending Topics"	Redirect to page with trending search topics	Does not redirect (No trending topics page)	
View comments by weight class	Click "Good", "Bad", or "Worst" to view comments with corresponding weight class	Filters comments by weight class (Shows only Good, Bad, or Worst comments)	Does not filter by weight class (no comments or weight classes)	

## **Glossary of Terms**

- **Requirement Traceability Matrix (RTM)**: is a document that maps and traces user requirements with test cases.