Bilkent University
Department Of Computer Engineering

CS 491 Senior Design Project I

Project Analysis Report

Project Name: Tattoo'd

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https://tattood.github.io

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1.Introduction

Tattoo'd is an Augmented Reality based Android application project, which is aimed at people who would like to get a tattoo, however could not make a decision on which one or where to get, and how it would look like. The application allows users to see the tattoo they like, whether from his/her own designs or from someone else's, on their own body by looking through the camera. Additionally, tattoo artists and tattoo shops will be able to share their own designs and see the ones that are popular.

The application will have three main fundamentals; it will have the augmented reality camera, user's own page and the discover page.

User's own page will include his/her own designs and uploads. Uploading is one of the most important features of the project. It will work with image analysis algorithms to extract the design from the background and will be able to tag the design for the searches. The uploaded tattoos will have the option of being published or being private and they will be grouped accordingly. The user can change this option for a picture any time he/she wants. If the tattoo is a private design, other users will not be able to see it. If it is not private, it will appear in the searches that users do according to the tags it has and also the other users will be able to see it if they visit the page of the user who published it. Also, the user can view the tattoos that he/she up-voted as a separate list.

Augmented Reality camera page will allow the users to choose a design from their page (published/private and up-voted tattoos). The design will appear on the camera as another layer and the user will be able to arrange the size of it and staple it to where he/she would likes. Using the augmented reality, the user can view the tattoo on his/her body as if it was real. The camera will also be able to shoot to save the photograph to the gallery of the mobile phone and have the option to share it on other social media platforms as Instagram and Facebook.

Discover page, will include most recent and most popular designs and also a search option. Search feature will give results according to the keyword that is searched and the tags that tattoos have. They also will be grouped as most recent ones and most popular ones. User can look through the designs of others in this page and also like them to save it and try.

2.Proposed System

2.1 Overview

   Tattood is an Android based mobile application where users can view tattoo designs on an AR camera. The user can view many tattoo designs from the discover option, upload his/her own designs, and view other user's pages. The application enables users to search a specific tattoo or a user for purposive users. When the user views a tattoo and his/her body on AR camera, the user can capture the image and he/she will be able to save it and/or share it on social media.

   Getting a tattoo is a troublesome process since once a tattoo is done, it becomes a permanent part of the person. The aim of Tattoo'd is to ease the process of getting a tattoo for the person and for the tattoo artist while paving the way for other tattoo artists by making the person see the tattoo on his/her body and easing the decision process.

2.2 Functional Requirements

- Users will be able to register and login to the system by their Facebook accounts or by sign-up.
- The user's profile can be seen by everyone.
- The user will be able to upload his/her designs.
- The user's public designs can be seen by everyone but his/her private designs cannot be seen by other users.
- The user will be able to see the tattoo design on his/her body using augmented reality camera.
- The user will be able to shoot and save the photograph on the android device if he/she likes on the augmented reality camera.
- The user will be able to share the photograph on other social media platforms as Instagram and Facebook.
- The user will be able to view all publicly published tattoo designs on the discover page.
- The user will be able to up-vote a design.
- The user will be able to view another user's page and his/her public tattoo designs.

2.3 Non-Functional Requirements

- The system will be a mobile application.

- The application will be develop on the Android platform.
- The application will require internet access.
- The application will be user friendly.
- The application will be reliable.

2.4 Pseudo Requirements

- The programming language we use will be Java.
- Using python programming language for server side and database interaction of the software.
- Matlab will be used for image analysis in the server side.
- If required some graphical libraries will be used for the augmented reality.
- For android, we will use Android Studio[1].

2.5 System Models

2.5.1 Scenarios

Scenario 1

Use Case Name: Registration
Actors: User Hannah
Entry Conditions:
- User Hannah opens the app
Exit Conditions:
- User Hannah finishes the registration
Main Flow of Events:
1. User Hannah opens Tattoo'd
2. Registration page opens
3. User Hannah connects her Google Account to the application
4. User Hannah selects her username
5. User Hannah clicks on the finish button
6. AR Camera opens

Scenario 2

Use Case Name: ViewTattooLibrary
Actors: User Hannah
Entry Conditions:
- User Hannah opens the application
Exit Conditions:
- User Hannah goes back to AR Camera page

Main Flow of Events:
1. User Hannah opens Tattoo'd
2. AR Camera page opens
3. User Hannah clicks the button access the tattoo library
4. User Hannah selects a tattoo design from "Public" OR "Private" OR "Liked" sections
5. User Hannah clicks the image
6. AR Camera opens with the selected image

Scenario 3

Use Case Name: PhotoSaveAndShare
Actors: User Hannah
Entry Conditions:
- User Hannah is at AR Camera Page AND
- User Hannah clicks Slide Down button
  Exit Conditions:
- User Hannah confirms share action
  Main Flow of Events:
1. AR Camera Page is open
2. User Hannah selects a tattoo design from Tattoo Library
3. User Hannah places the tattoo
4. User Hannah takes the photo
5. Photo page opens
6. User Hannah saves the photo in her phone
7. User Hannah clicks share button
8. User Hannah chooses her desired social media
9. User Hannah confirms her share action

Scenario 4

Use Case Name: SearchTattooLibrary
Actors: User Hannah
Entry Conditions:
- User Hannah opens the application
  Exit Conditions:
- User Hannah returns to the AR Camera page
  Main Flow of Events:
1. User Hannah opens Tattoo'd
2. AR Camera page opens
3. User Hannah clicks the Library Icon
4. Library Page opens
5. User Hannah clicks search button
6. User Hannah enters a keyword and performs the search
7. Results with that tag appears

8. User Hannah picks a tattoo from that page OR she can expand "Private" or "Public" or "Liked" sections and select a tattoo from there
9. AR Camera opens with the selected tattoo

Scenario 5

Use Case Name: UploadTattoo
Actors: User Hannah
Entry Conditions:
- User Hannah is at User Page
  Exit Conditions:
- User Hannah clicks done OR cancel buttons
  Main Flow of Events:
1. User Hannah opens Tattoo'd
2. AR Camera page opens
3. User Hannah swipes left OR clicks user icon on the down left corner
4. User Page opens
5. User Hannah clicks upload button
6. Potential tattoo designs from the camera roll is displayed
7. User Hannah chooses an image

Scenario 6

Use Case Name: SelectTattooObjects
Actors: User Hannah
Entry Conditions:
- User Hannah is at User Page AND
- User Hannah uploaded a tattoo
  Exit Conditions:
- User Hannah clicks done OR cancel buttons
  Main Flow of Events:
1. User Hannah opens Tattoo'd
2. AR Camera page opens
3. User Hannah swipes left OR clicks user icon on the down left corner
4. User Page opens
5. User Hannah clicks upload button
6. Potential tattoo designs from the camera roll is displayed
7. User Hannah chooses an image
8. Potential objects are extracted from the image and displayed prominently
9. User Hannah can select/deselect the favoured one(s) among them by clicking on each extracted object

Scenario 7

Use Case Name: EditTattoo
Actors: User Hannah

Entry Conditions:
- User Hannah is at User Page AND
- User Hannah selects a tattoo from "Private Tattoos" OR "Public tattoos" sections OR
- User Hannah uploads a tattoo AND extracts object(s)

   Exit Conditions:
- User Hannah clicks done OR cancel buttons

   Main Flow of Events:
1. User Hannah opens Tattoo'd
2. AR Camera page opens
3. User Hannah swipes left OR clicks user icon on the down left corner
4. User Page opens
5. User Hannah selects a tattoo design
6. Tattoo edit page opens

Scenario 8

   Use Case Name: EditTattooTags
   Actors: User Hannah
   Entry Conditions:
- User Hannah is at Edit Tattoo page

   Exit Conditions:
- User Hannah clicks done OR cancel OR delete buttons

   Main Flow of Events:
1. User Hannah opens Tattoo'd
2. AR Camera page opens
3. User Hannah swipes left OR clicks user icon on the down left corner
4. User Page opens
5. User Hannah selects a tattoo design
6. Tattoo edit page opens
7. User Hannah can add tags by entering it to the input field OR remove tags from the tattoo by clicking delete option near each tag

Scenario 9

   Use Case Name: SetTattooVisibility
   Actors: User Hannah
   Entry Conditions:
- User Hannah is at Edit Tattoo page

   Exit Conditions:
- User Hannah clicks done OR cancel OR delete buttons

   Main Flow of Events:
1. User Hannah opens Tattoo'd
2. AR Camera page opens
3. User Hannah swipes left OR clicks user icon on the down left corner
4. User Page opens
5. User Hannah selects a tattoo design

6. Tattoo edit page opens
7. User Hannah can set the visibility of the tattoo to private/public by clicking the lock button below the tattoo

Scenario 10

Use Case Name: DeleteTattoo
Actors: User Hannah
Entry Conditions:
● User Hannah is at Edit Tattoo page
Exit Conditions:
● User Hannah clicks delete button
Main Flow of Events:
1. User Hannah opens Tattoo'd
2. AR Camera page opens
3. User Hannah swipes left OR clicks user icon on the down left corner
4. User Page opens
5. User Hannah selects a tattoo design
6. Tattoo edit page opens
7. User Hannah clicks delete tattoo

Scenario 11

Use Case Name: ViewTattoo
Actors: User Hannah
Entry Conditions:
● User Hannah is at Discover Page.
Exit Conditions:
● User Hannah returns to the Discover Page.
Main Flow of Events:
1. User Hannah opens Tattoo'd.
2. AR Camera page opens.
3. User Hannah swipes right OR clicks discover icon on the down right corner.
4. Discover Page opens.
5. User Hannah selects a tattoo design from discover page.
6. Tattoo page opens.

Scenario 12

Use Case Name: Like/UnlikeTattoo
Actors: User Hannah
Entry Conditions:
● User Hannah is at View Tattoo page.
Exit Conditions:
● User Hannah returns to the discover page.
Main Flow of Events:

1. User Hannah opens Tattoo'd.
2. AR Camera page opens.
3. User Hannah swipes right OR clicks discover icon on the down right corner.
4. Discover Page opens.
5. User Hannah selects a tattoo design from discover page.
6. View tattoo page opens.
7. User Hannah clicks like/unlike button.

Scenario 13

Use Case Name: ViewArtistPage
Actors: User Hannah
Entry Conditions:
● User Hannah is at View Tattoo page.
Exit Conditions:
● User Hannah returns to the view tattoo page.
Main Flow of Events:
1. User Hannah opens Tattoo'd.
2. AR Camera page opens.
3. User Hannah swipes right OR clicks discover icon on the down right corner.
4. Discover Page opens.
5. User Hannah selects a tattoo design from discover page.
6. View tattoo page opens.
7. User Hannah clicks artist name.
8. Artist page opens.

Scenario 14

Use Case Name: ViewTattooMore
Actors: User Hannah
Entry Conditions:
● User Hannah is at Discover Page.
Exit Conditions:
● User Hannah returns to the Discover Page.
Main Flow of Events:
1. User Hannah opens Tattoo'd.
2. AR Camera page opens.
3. User Hannah swipes right OR clicks discover icon on the down right corner.
4. Discover Page opens.
5. User Hannah clicks view RECENT or POPULAR section.
6. Discovery page gets populated with more of the tattoos from the selected section.
7. User Hannah selects a tattoo design.
8. View tattoo page opens.

Scenario 15

Use Case Name: ViewTattooSearch
Actors: User Hannah
Entry Conditions:
- User Hannah is at Discover Page.
  Exit Conditions:
- User Hannah returns to the Discover Page.
  Main Flow of Events:
1. User Hannah opens Tattoo'd.
2. AR Camera page opens.
3. User Hannah swipes right OR clicks discover icon on the down right corner.
4. Discover Page opens.
5. User Hannah search the tag she want to see a tattoo about.
6. Search results are seen.
7. User Hannah selects a tattoo design from search results.
8. View tattoo page opens.

Scenario 16

Use Case Name: ViewTattooOnARCamera
Actors: User Hannah
Entry Conditions:
- User Hannah is at View Tattoo page.
  Exit Conditions:
- User Hannah returns to the view tattoo page.
  Main Flow of Events:
1. User Hannah opens Tattoo'd.
2. AR Camera page opens.
3. User Hannah swipes right OR clicks discover icon on the down right corner.
4. Discover Page opens.
5. User Hannah selects a tattoo design from discover page.
6. View tattoo page opens.
7. Click see tattoo button.
8. AR Camera page opens with the selected tattoo.
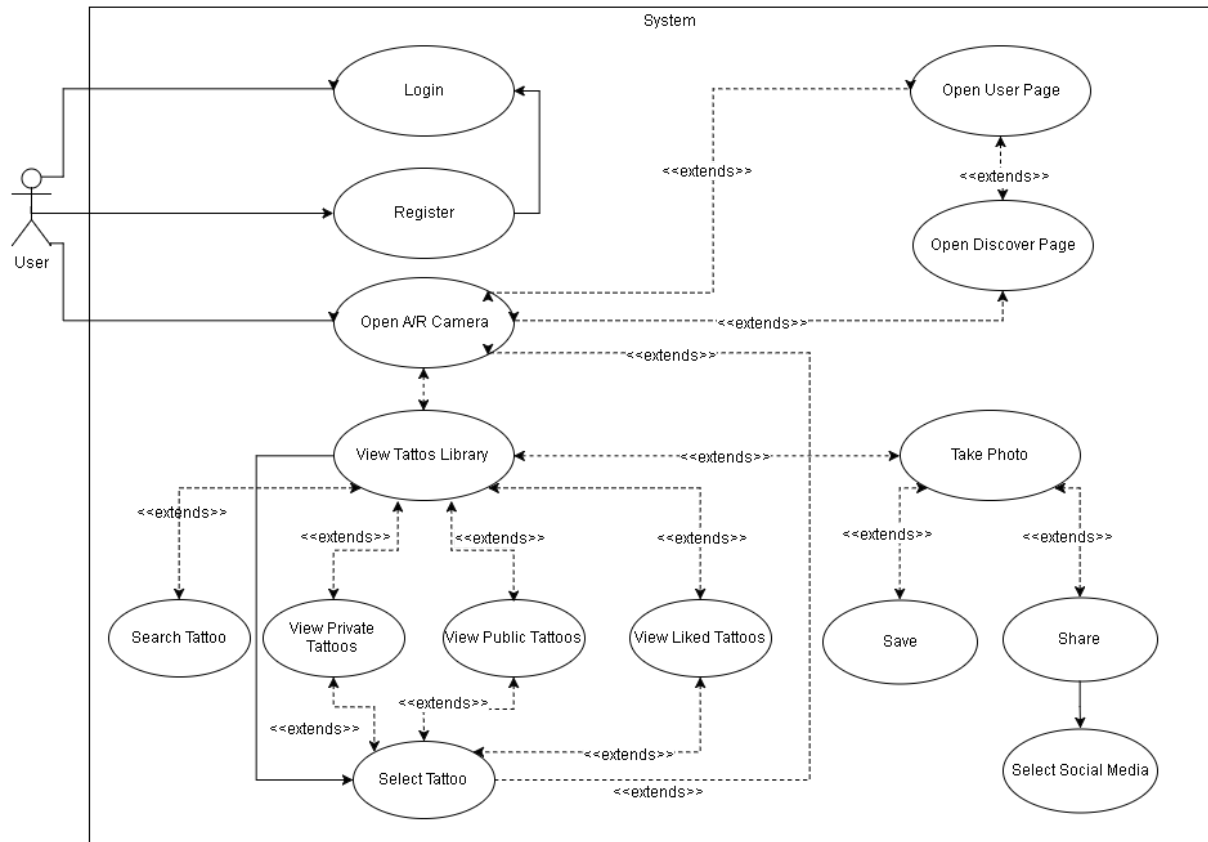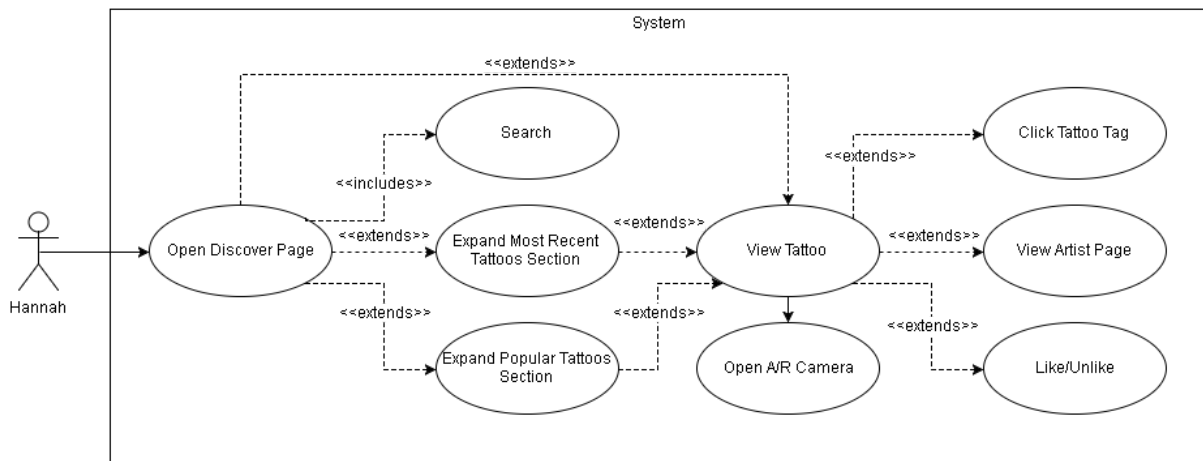
2.5.2 Use Case Models
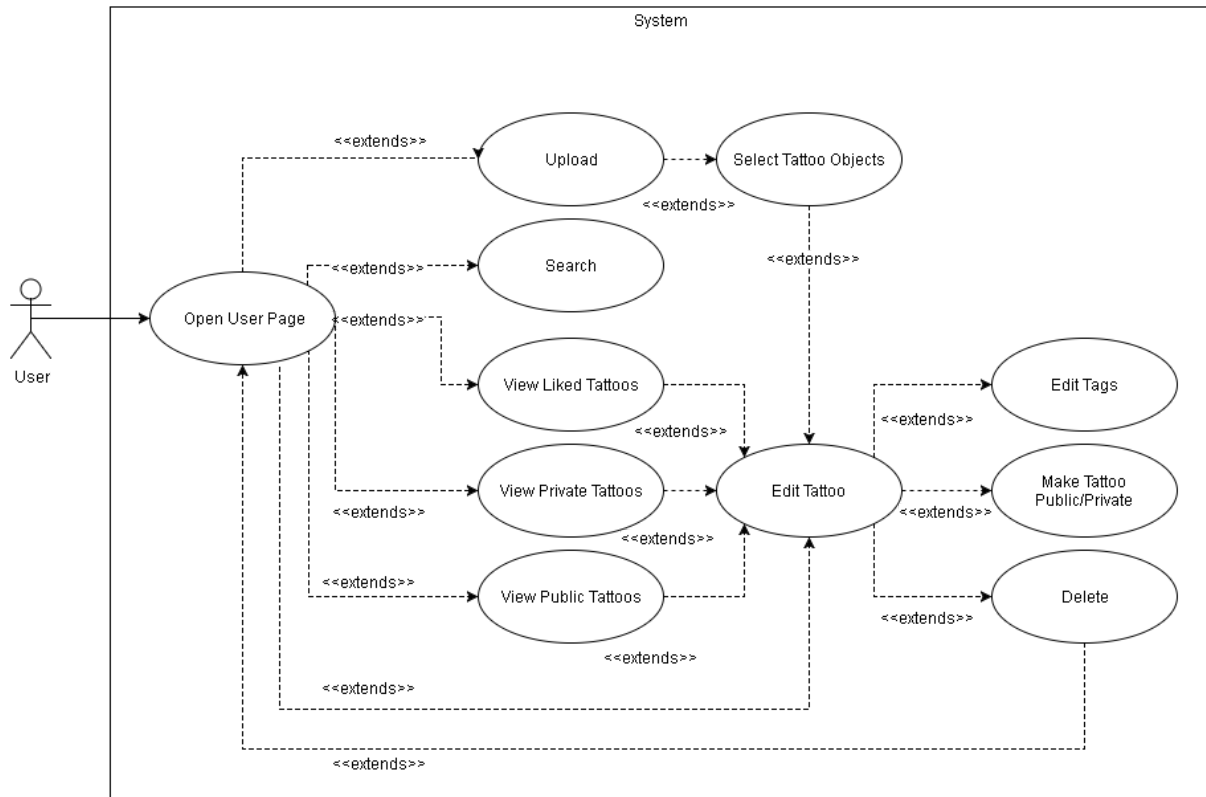

Figure 1.Use Case Model

Figure 2. Use Case Model

Figure 3. Use Case Model

2.5.2.1 Overview

2.5.2.1.1 A/R Camera Tab

1. **Use Case Name:** Register
Actors: User
Entry Conditions: User opens the application
Exit Conditions: User is on AR Camera Page
Main Flow of Events:
1. User gets prompted to choose a Google Account for registration
2. User selects an account
3. User gets prompted to choose a username
4. User selects a username
5. Registration gets completed
6. Use case ends, user returns to AR Camera Page

2. **Use Case Name:** Open Discover Page
Actors: User
Entry Conditions: User is on AR Camera Page OR User page
Exit Conditions: User is on Discover Page
Main Flow of Events:
1. User clicks discovery button on the bottom bar OR Swipes

3. **Use Case Name:** Open User Page

Actors: User

Entry Conditions: User is on AR Camera Page OR Discovery Page

Exit Conditions: User is on User Page

Main Flow of Events:
1. User clicks user page button on the bottom bar OR Swipes

4. **Use Case Name:** View Tattoo Library

Actors: User

Entry Conditions: User is on AR Camera Page

Exit Conditions: User is on Tattoo Library Page

Main Flow of Events:
1. User clicks on Tattoo library button

5. **Use Case Name:** Take Photo

Actors: User

Entry Conditions: User is on AR Camera Page

Exit Conditions: User is on Action Selection page

Main Flow of Events:
1. User clicks take photo button
2. Use case ends, system asks whether to Share or Save the photo

6. **Use Case Name:** Save

Actors: User

Entry Conditions: User is on Selection Page

Exit Conditions: User is on Action Selection Page

Main Flow of Events:
1. User clicks save button
2. Photo gets saved to the gallery
3. User returns to selection page

7. **Use Case Name:** Share

Actors: User

Entry Conditions: User is on Action Selection Page

Exit Conditions: User is on Action Selection Page

Main Flow of Events:
1. User selects Share button
2. User gets a prompt to choose the social media

8. **Use Case Name:** Select Social Media

Actors: User

Entry Conditions: User is on Select Social Media Page

Exit Conditions: User is on Action Selection Page

Main Flow of Events:
1. User selects a social media to share

2. Photo gets shared, user returns to Action Selection Page

9. **Use Case Name:** View Private Tattoos
Actors: User
Entry Conditions: User is on Tattoo Library Page
Exit Conditions: User is on Tattoo Library Page
Main Flow of Events:
1. User clicks the header of 'Private' section
2. Tattoo Library gets repopulated with the private tattoo designs

10. **Use Case Name:** View Public Tattoos
Actors: User
Entry Conditions: User is on Tattoo Library Page
Exit Conditions: User is on Tattoo Library Page
Main Flow of Events:
1. User clicks the header of 'Public' section
2. Tattoo Library gets repopulated with the public tattoo designs

11. **Use Case Name:** View Liked Tattoos
Actors: User
Entry Conditions: User is on Tattoo Library Page
Exit Conditions: User is on Tattoo Library Page
Main Flow of Events:
1. User clicks the header of 'Liked' section
2. Tattoo Library gets repopulated with the liked tattoo designs

12. **Use Case Name:** Select Tattoo
Actors: User
Entry Conditions: User is on Tattoo Library Page
Exit Conditions: User is on Tattoo View Page
Main Flow of Events:
1. User clicks a tattoo
2. Use case ends, Selected Tattoo page opens

13. **Use Case Name:** Search
Actors: User
Entry Conditions: User is on Tattoo Library Page
Exit Conditions: User is on Tattoo Library Page
Main Flow of Events:
1. User clicks search bar and enters a keyword
2. Tattoo library gets repopulated with the tattoos that match the keyword

1. **Use Case Name:** Search
Actors: User
Entry Conditions: User is on Discover Page
Exit Conditions: User is on Discover Page
Main Flow of Events:
1. User clicks search bar and enters a keyword
2. Discover page gets repopulated with the tattoos that match the keyword

2. **Use Case Name:** View Most Recent Tattoos
Actors: User
Entry Conditions: User is on Discover Page
Exit Conditions: User is on Discover Page
Main Flow of Events:
1. User clicks the header of section 'Recent'
2. Discover page gets repopulated with the recent tattoos

3. **Use Case Name:** View Most Popular Tattoos
Actors: User
Entry Conditions: User is on Discover Page
Exit Conditions: User is on Discover Page
Main Flow of Events:
1. User clicks the header of section 'Popular'
2. Discover page gets repopulated with the popular tattoos

4. **Use Case Name:** View Tattoo
Actors: User
Entry Conditions: User is on Discover Page
Exit Conditions: User is on Tattoo View Page
Main Flow of Events:
1. User clicks a tattoo
2. Tattoo page of the selected tattoo opens

5. **Use Case Name:** Open A/R Camera
Actors: User
Entry Conditions: User is on Tattoo View Page
Exit Conditions: User is on AR Camera Page
Main Flow of Events:
1. User clicks camera icon
2. AR Camera Page opens with the selected tattoo design.

6. **Use Case Name:** Click Tattoo Tag
Actors: User
Entry Conditions: User is on Tattoo ViewPage

Exit Conditions: User is on Discover Page
Main Flow of Events:
1. User clicks a tag
2. Discover page gets opens with the tattoos that contain the tag

7. **Use Case Name:** View Artist Page
Actors: User
Entry Conditions: User is on Tattoo View Page
Exit Conditions: User is on User Page
Main Flow of Events:
1. User clicks the user of the tattoo
2. User page of the clicked user opens

8. **Use Case Name:** Like/Unlike
Actors: User
Entry Conditions: User is on Tattoo View Page
Exit Conditions: User is on Tattoo View Page
Main Flow of Events:
1. User clicks Like/Unlike button
2. Use case ends

2.5.2.1.3 User Tab

1. **Use Case Name:** Upload
Actors: User
Entry Conditions: User is on User Page
Exit Conditions: User is on Object Selection Page
Main Flow of Events:
1. User clicks upload button
2. Gallery opens
3. User selects a tattoo to upload
4. Object selection page opens for the uploaded tattoo

2. **Use Case Name:** Upload
Actors: User
Entry Conditions: User is on User Page
Exit Conditions: User is on User Page
Main Flow of Events:
1. User clicks search bar and enters a keyword
2. User page gets repopulated with the tattoos that match the keyword

3. **Use Case Name:** View Liked Tattoos
Actors: User
Entry Conditions: User is on User Page
Exit Conditions: User is on User Page

Main Flow of Events:

1. User clicks the header of 'Liked'
2. User page gets repopulated with the remaining of liked tattoos

4. **Use Case Name:** View Public Tattoos

Actors: User

Entry Conditions: User is on User Page

Exit Conditions: User is on User Page

Main Flow of Events:

1. User clicks the header of 'Public
2. User page gets repopulated with the remaining of public tattoos

5. **Use Case Name:** View Private Tattoos

Actors: User

Entry Conditions: User is on User Page

Exit Conditions: User is on User Page

Main Flow of Events:

1. User clicks the header of 'Private'
2. User page gets repopulated with the remaining of private tattoos

6. **Use Case Name:** Select Tattoo Objects

Actors: User

Entry Conditions: User is on Upload Page

Exit Conditions: User is on Edit Tattoo Page

Main Flow of Events:

1. User uploads a tattoo design
2. User gets prompted to select objects in the tattoo
3. User returns to Edit Tattoo Page of the uploaded tattoo

7. **Use Case Name:** Edit Tattoo

Actors: User

Entry Conditions: User is View Liked Tattoos OR View Public Tattoos OR View Private Tattoos

Exit Conditions: User is on Edit Tattoo Page

Main Flow of Events:

1. User clicks a tattoo design
2. Use case ends, Tattoo edit page of the selected tattoo opens

8. **Use Case Name:** Edit Tags

Actors: User

Entry Conditions: User is on Edit Tattoo Page

Exit Conditions: User is on Edit Tattoo Page

Main Flow of Events:

1. User edits the tags
2. User clicks finish button, Use case ends

9. **Use Case Name:** Make Tattoo Private/Public

Actors: User

Entry Conditions: User is on Edit Tattoo Page

Exit Conditions: User is on Edit Tattoo Page

Main Flow of Events:

1. User clicks visibility icon
2. User selects the desired visibility of the Tattoo

10. **Use Case Name:** Delete

Actors: User

Entry Conditions: User is on Edit Tattoo Page

Exit Conditions: User is on User Page

Main Flow of Events:

1. User clicks Delete Tattoo button
2. User gets prompted for confirmation
3. Tattoo gets deleted, user returns to User Page

2.5.3 Object and Class Model

Boundary classes will be implemented with using the Android Framework's user interface
tools and libraries and Controller classes will be implemented with extending the Activity
class of the library, hence they are omitted from the class diagram below.

Entity Objects

User: The class that holds the information about the user of the application.

Library: The class that holds the all tattoos that one user have with differentiating the private,
public and liked tattoos from each other.

Discover: The class that holds the most recent and popular tattoos among all users.

Tattoo: Tattoo object that holds the information like privacy, user etc.

MetaTattoo: An object that holds the all candidate tattoos information about the uploaded
photograph from user.

Controller Objects

NetworkManager: The controller class that connects the application with the server side and
responsible for the authentication, requests to and responses from server and databases.
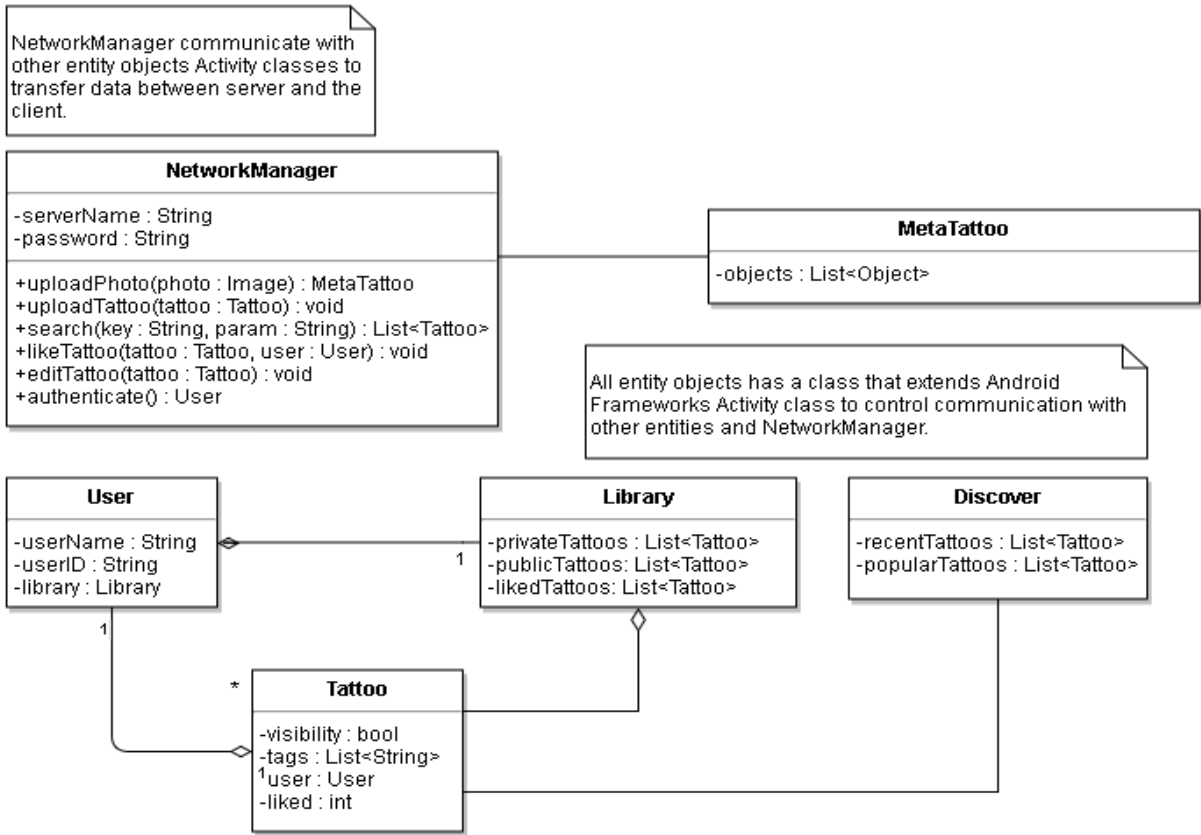
Figure 4. Class Diagram

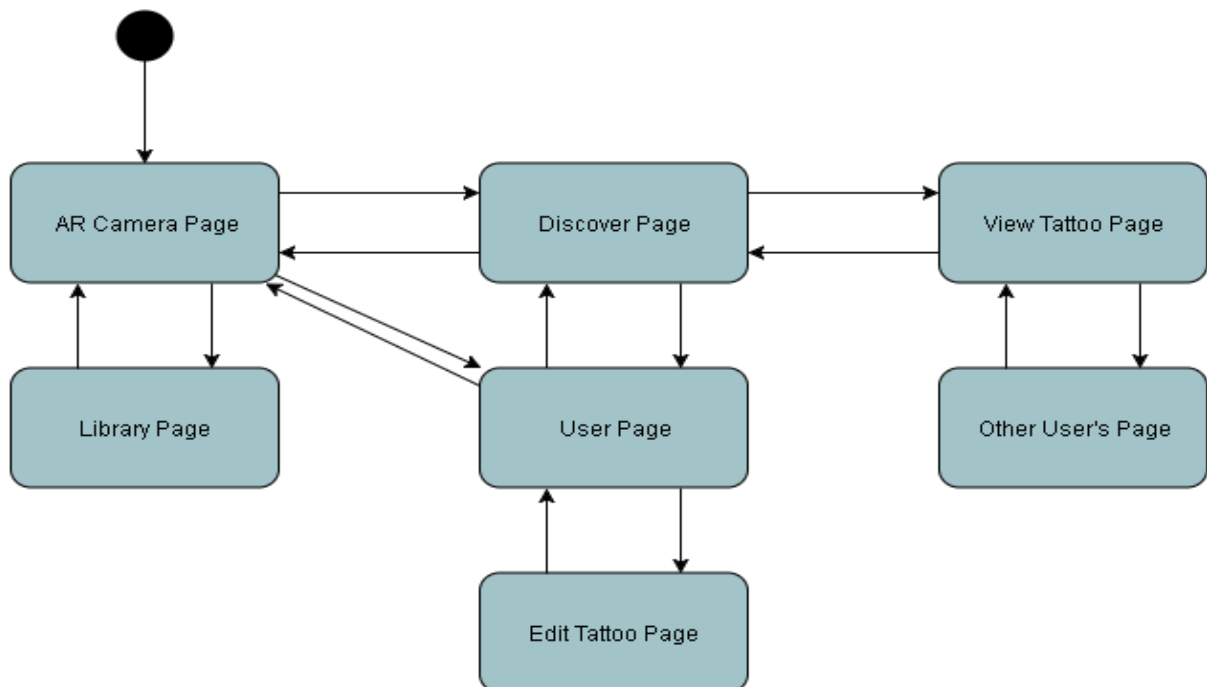## 2.5.4 Dynamic Model

2.5.4.1 Page State Diagram

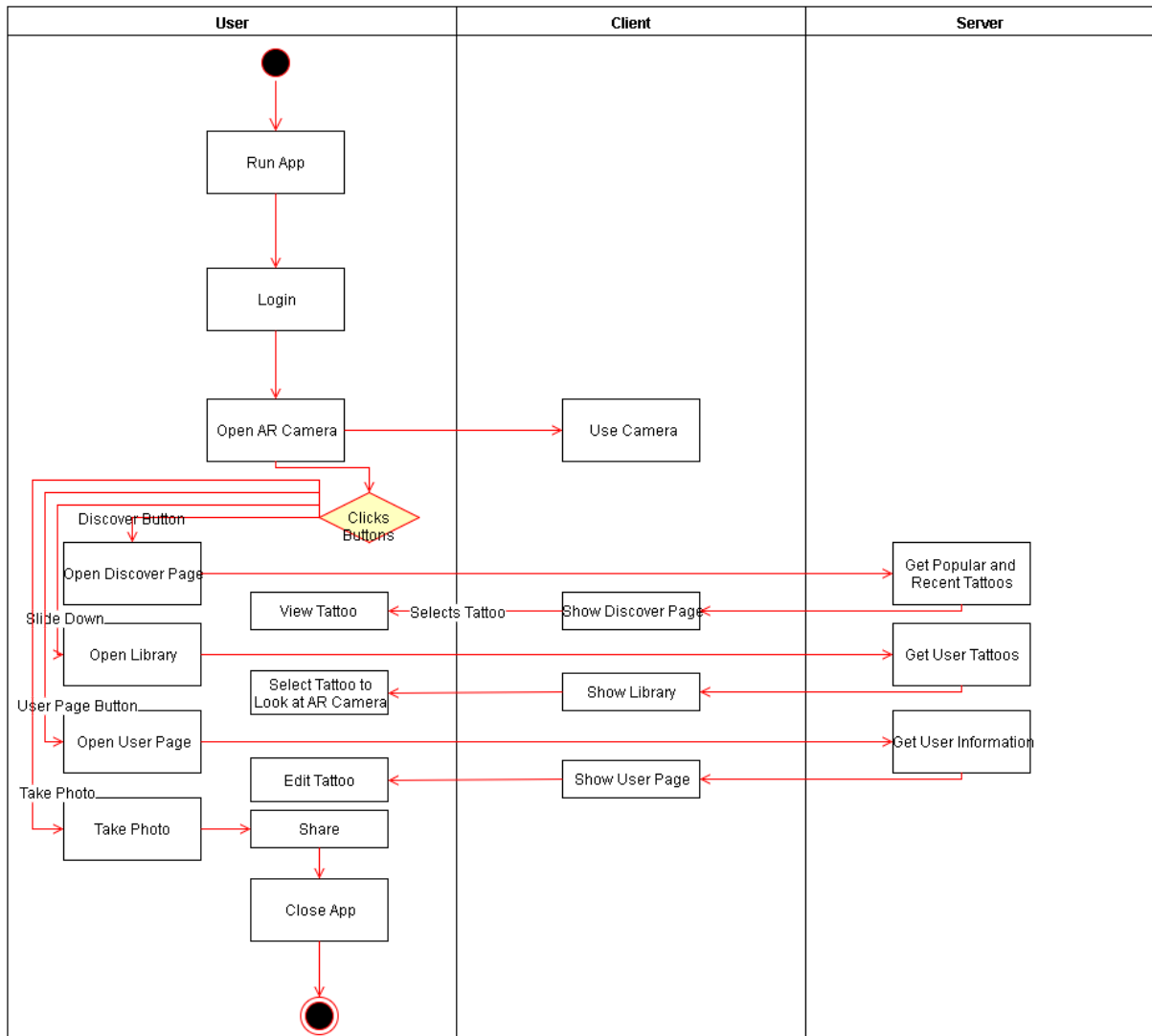Figure 5.Page State Diagram

2.5.4.2 Activity Diagram

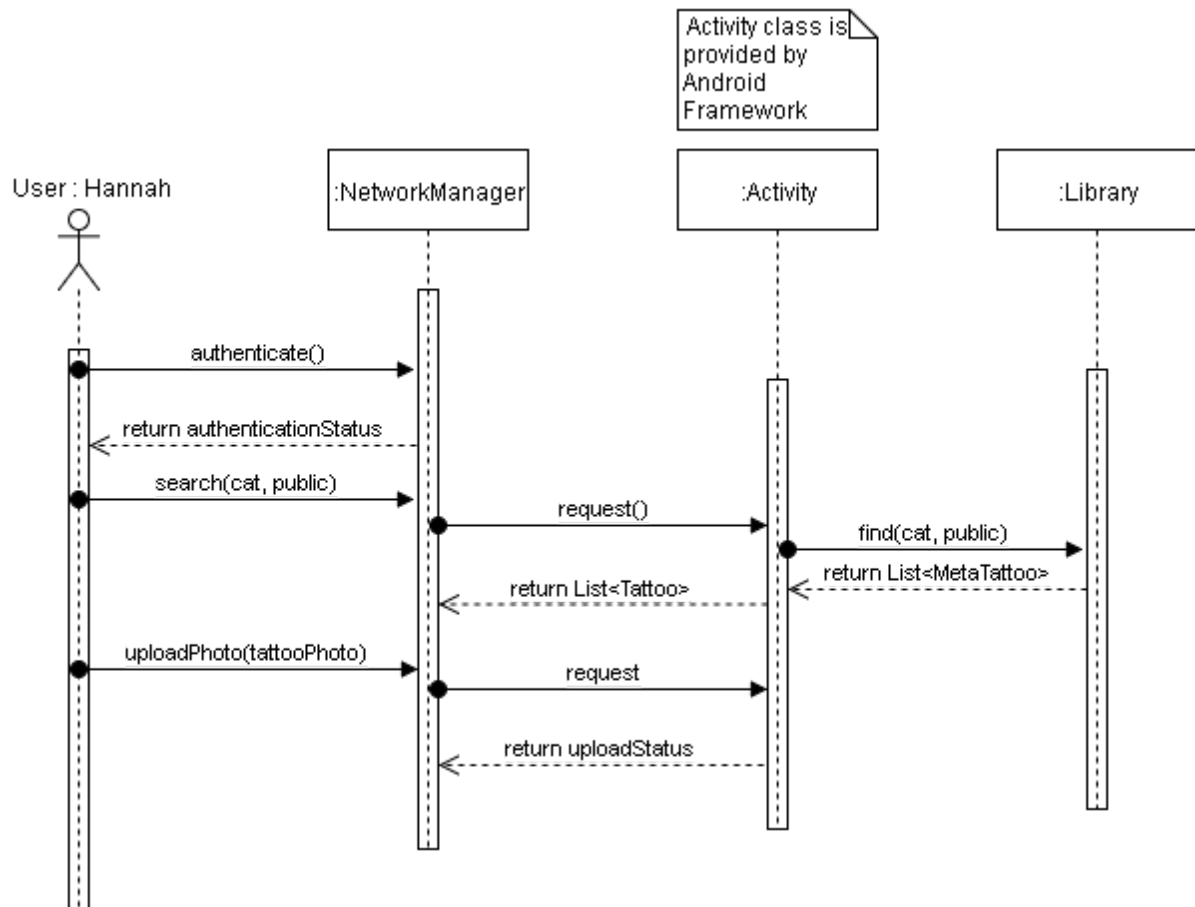Figure 6. Activity Diagram

2.5.4.3 Sequence Diagrams

Figure 7.
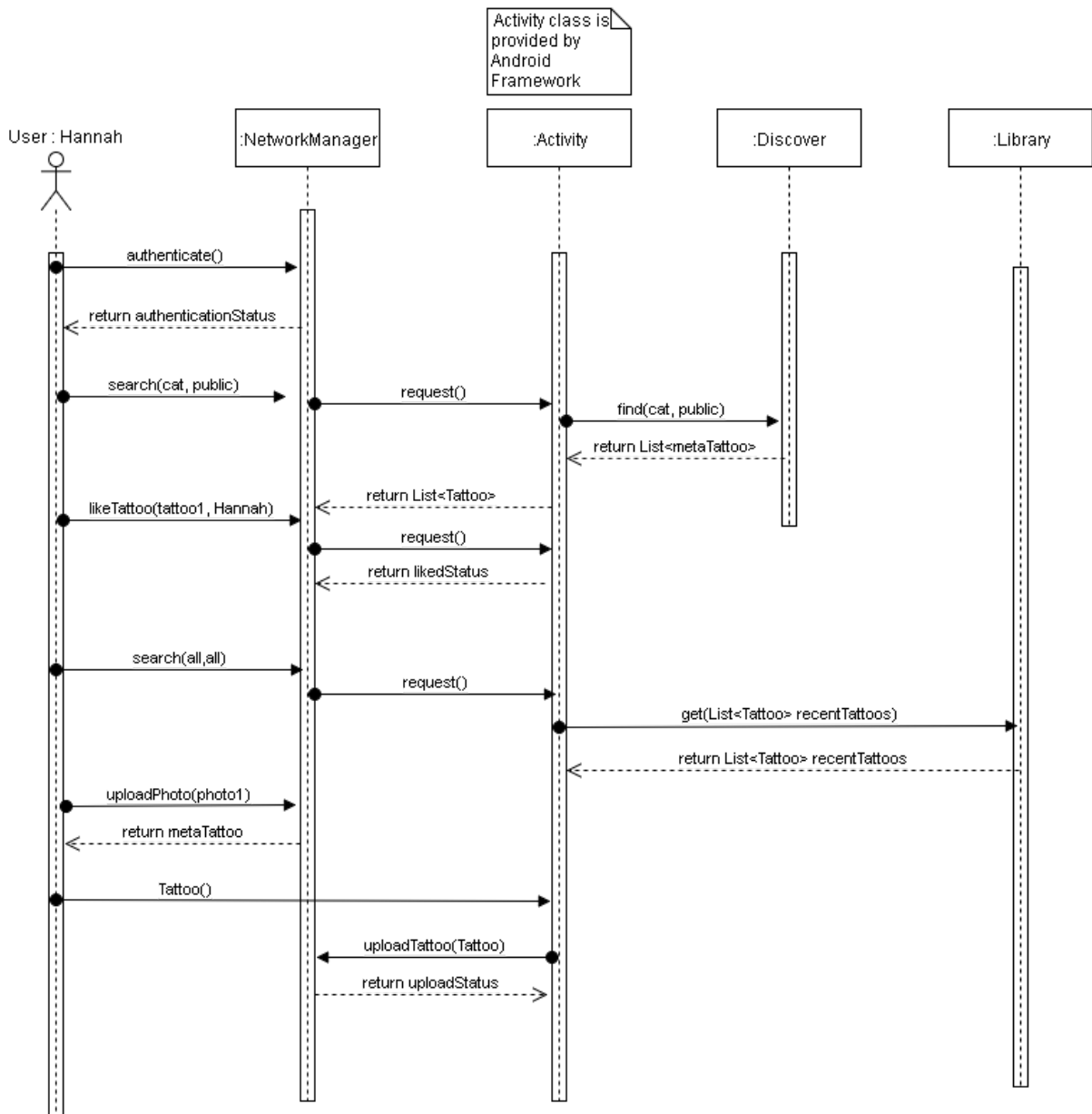User Hannah Searches For Cat Tattoos And See All Public Cat Tattoos

Figure 8.
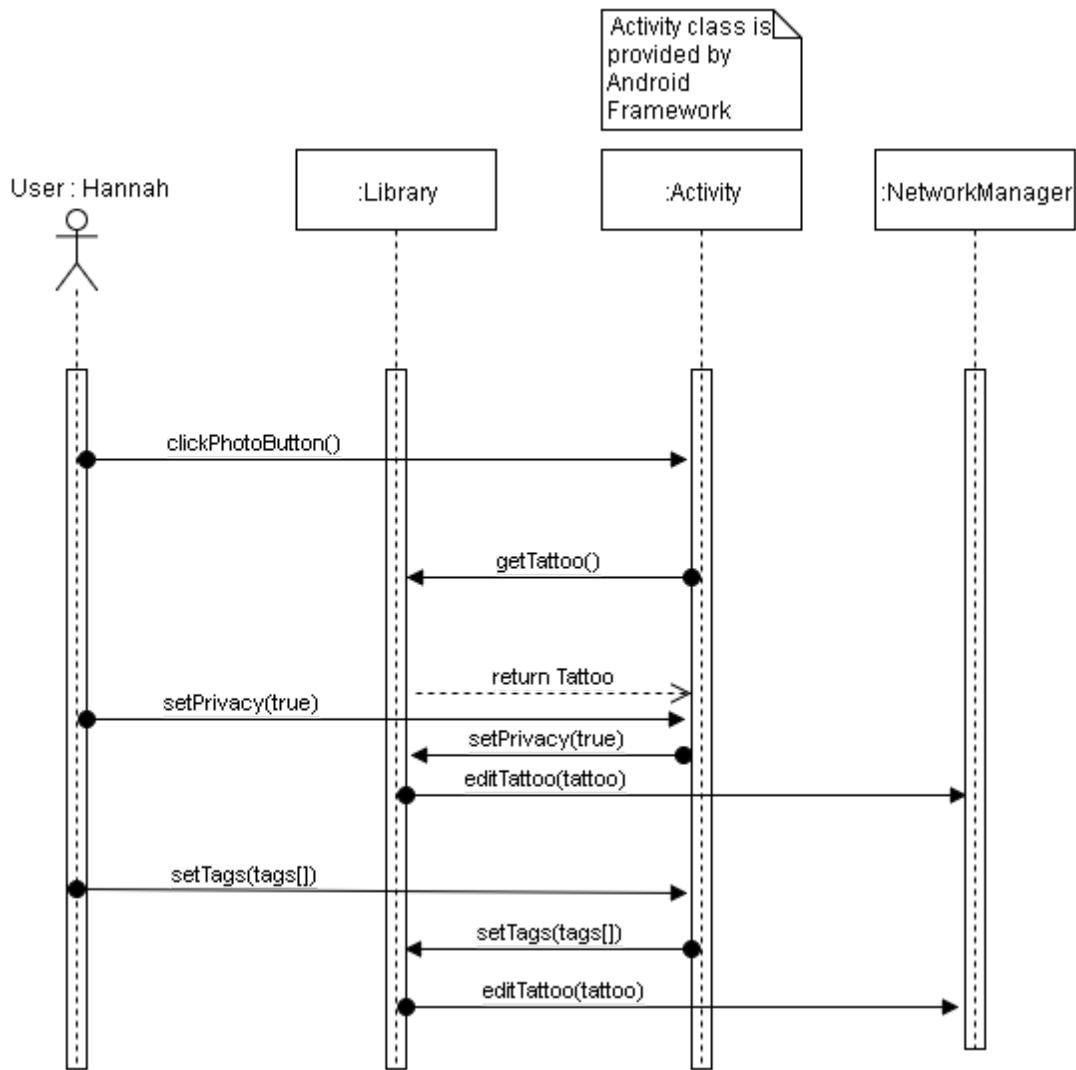User Hannah Searches For All Public Cat Tattoos and Likes One Tattoo and Selects Tattoo

Figure 9.
Hannah Selects Photo Sets Photos Privacy to Public and Sets Tags to the Tattoo

2.5.5 User Interface

In the User Interface that is designed for this project, there are three main tabs which involve many other pages in them. When the user decides to display another tab, the tab he/she is on saves its state (i.e. on which page of the recent tab the user clicked to another tab). When the user clicks on the tab which saved its state before, the tab continues to display from the page that the saved state indicates. The tab at the left is "User Tab", bottom one is "Camera Tab" and the right one is "Discover Tab".

Figure 10. Tabs

2.5.5.1 Sign In
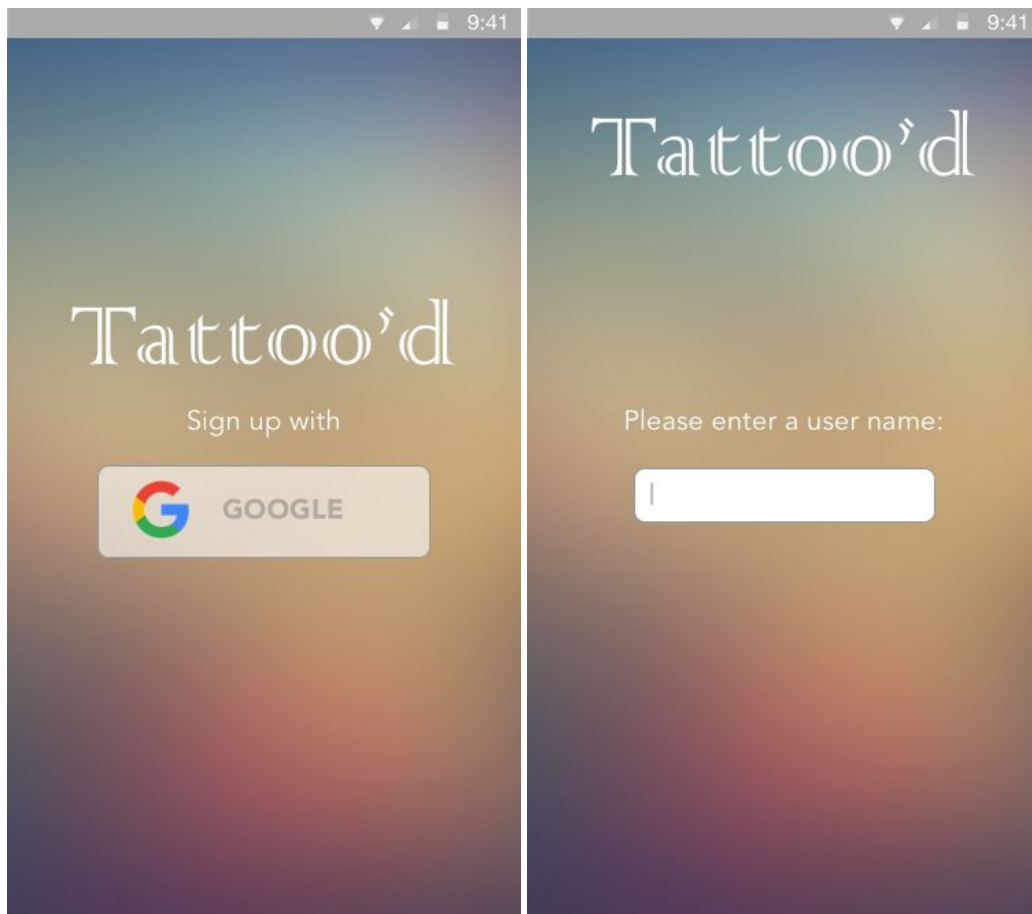
Figure 11. Sign in steps

Tattoo'd is an application that requires a Google account login. To sign up, a user must log into his/her Google account from Tattoo'd as shown in the Figure 1. After connecting their

accounts, the user selects an unique username in order to use within the application. If the user have already connected his/her Google account to the application and selected a user name, he/she can log into it directly by logging into his/her Google account. So that, he/she can continue with his/her in-use account.

2.5.5.2 Camera Tab

The button in the middle directs user "Camera Tab" when it is clicked while the user on a different tab. In this tab, there are are two pages: "A/R Camera" and "AR Selection Library".

2.5.5.2.1 AR Camera

Figure 12. Camera Tab, AR Camera Page

"Augmented Reality Camera" is the first screen that is displayed when the user runs the application as in Figure 1 and also it is the main page of the Camera Tab. The button at the middle is also to shoot the scene if user is already in Camera Tab, which involves the augmented reality tattoo. In order to use Augmented Reality feature user must slide down the button at the top. "Library" screen opens as a result of this action and from the "Library" screen the user can choose a tattoo design, that he/she uploaded/liked before. The selected

tattoo appears on the AR Camera screen. Thereby, the user can arrange the tattoo placement on her/his body and take a photo of it.
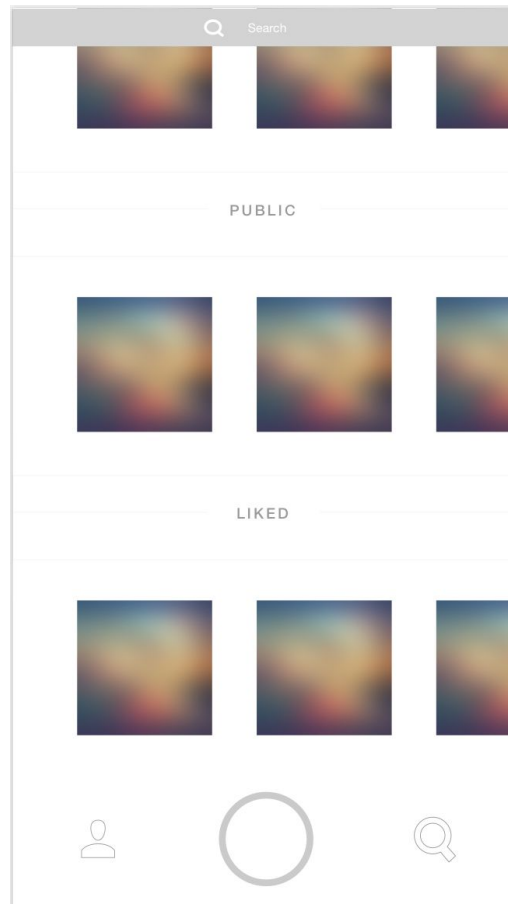
Figure 13. Camera Tab, AR Selection Library

"Augmented Reality Selection Library" contains and displays tattoo designs that the user liked/uploaded before, so that it enables user to try the tattoo designs on his/her body.

User can view "Private"/"Public"/"Liked" tattoos in his/her library by scrolling left and can click on the tattoo he/she wants to try. The page directs the tattoo design to AR Camera screen. User also can make a search by writing into "Search" field in the screen. Sections will be updated according to the search, so that tattoos that have the search related tag will appear in the related section. Furthermore, the user will be able to expand "Private", "Public", "Liked" sections by clicking the section title such as shown below. When the user clicks the "Shoot" button at the bottom on "AR Selection Library" or on expanded "Public" "Private" "Liked" section pages, application cancels the interaction with the library and returns to AR Camera page.
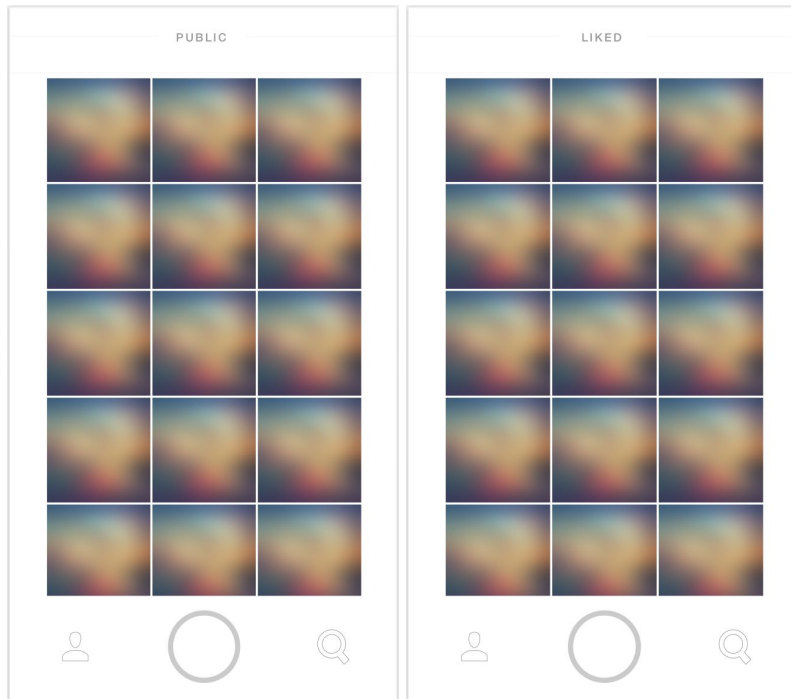
Figure 14. Camera Tab, Expanded Public View & Expanded Private View

Figure 15. Camera Tab, Expanded Liked View

2.5.5.3 User Tab

       The right tab leads the user to his/her "User Tab" when it is clicked, while user is on another tab. "User Tab" involves four different type of pages: "User Page", "Edit Page", "Tattoo View Page" and "User Page of Another User".
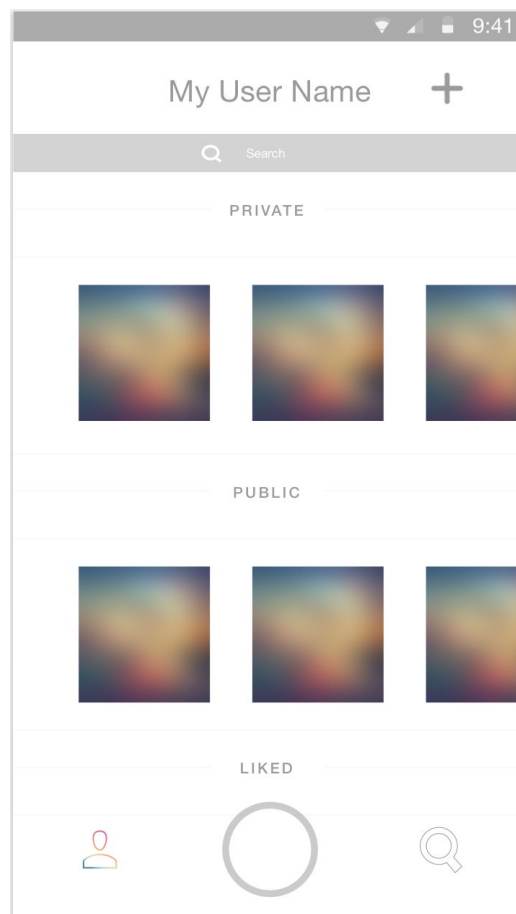
2.5.5.3.1 User Page

Figure 16. User Tab, User Page

       "User Page" is the main page that is displayed when the user clicks on User Tab. User's library can be viewed through this page. The library involves uploaded tattoos, which are divided into two sections: "Public" and "Private", and also tattoos that are liked before by the user.

       When the user clicks a tattoo of his/her from "Private" or "Public" section, he/she will be directed to "Edit Page" to edit its properties. If user clicks on a tattoo from "Liked" section, application leads him/her to "Tattoo View" page on User Tab to view the one he/she selected. User can also search through his/her library by using search field at the top of the page. "Private", "Public" and "Liked" sections is updated according to the search. Furthermore, these sections can be expanded by clicking the section title such as in Figure 17 & 18. By clicking back button at the right top of the pages user will be back to "User Page".

User can upload a tattoo design by clicking "+" button. This option directs him/her to choose a photo from camera roll. After uploading, a page with extracted objects is displayed as a result of an image analysis on the uploaded photo. So that, he/she can select the desired parts, create tattoos, save them as public tattoo or private tattoo by editing and view them from this page under the related section (Private/Public sections).
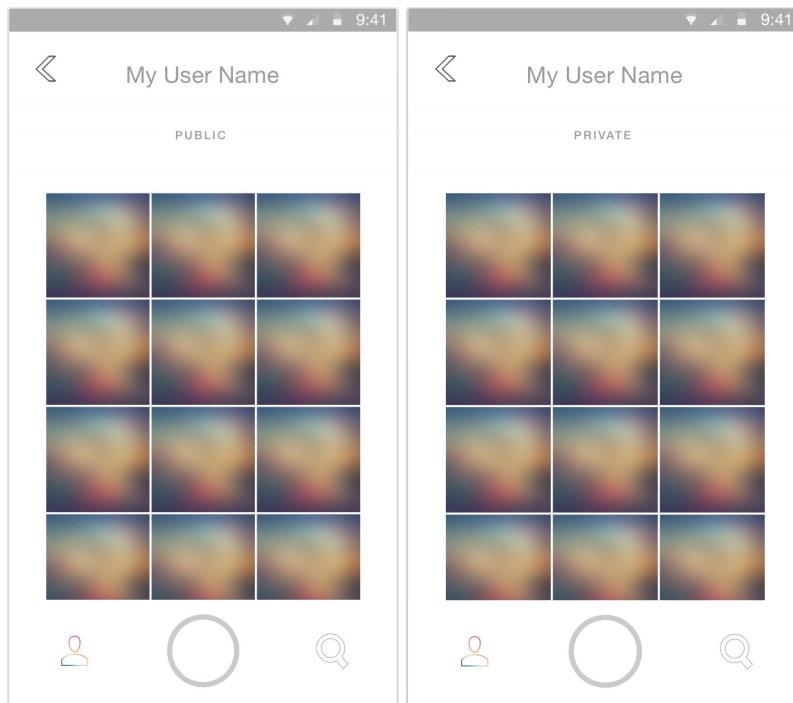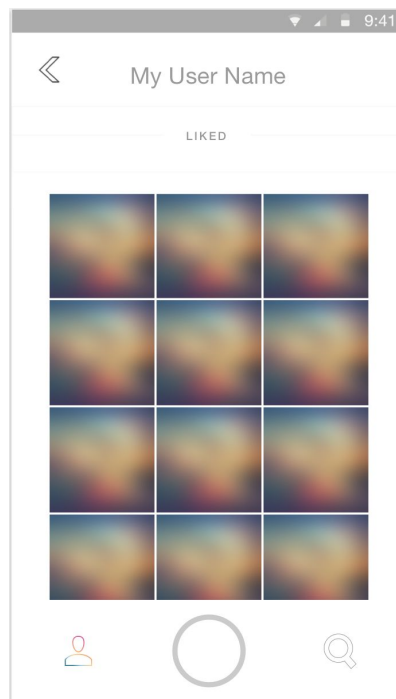

Figure 17. User Tab, Expanded Private & Public View

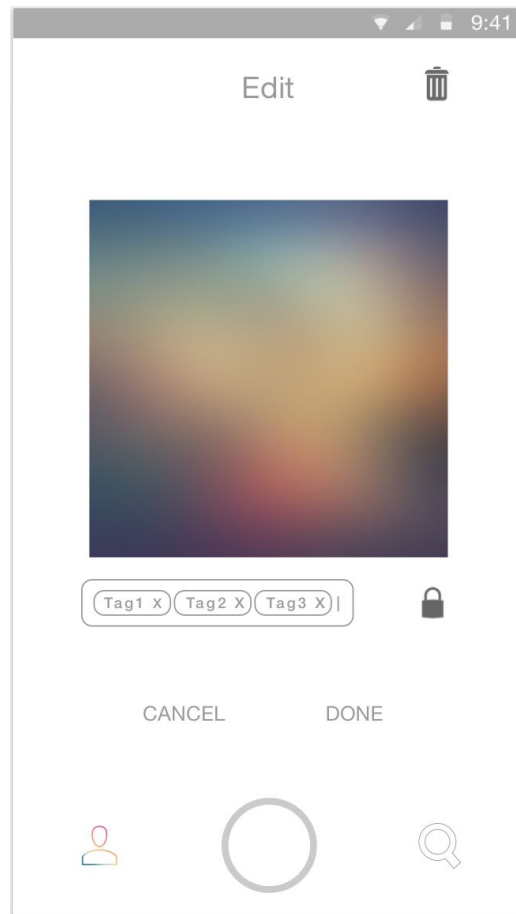.Figure 18. User Tab, Expanded Liked View

Figure 19. User Tab, Edit Page

It is displayed if the user clicks on a tattoo he/she uploaded before or after the extraction step of a tattoo that is being recently uploaded. "Edit Page" enables users to edit properties of their uploaded tattoo designs. These properties include visibility of a tattoo to another user any related tags. Visibility changes by clicking the lock button. The box under the design contains tag. By clicking to it, user can add more tags to a tattoo or by clicking "x" next to the tag, user can delete the related tag. After finishing edit process user clicks done to return "User Page". He/she can also click cancel to unsave the changes he/she made. Additionally, edit page provides the user being able to delete a tattoo from your library. User can click the trash bin logo to delete the design.
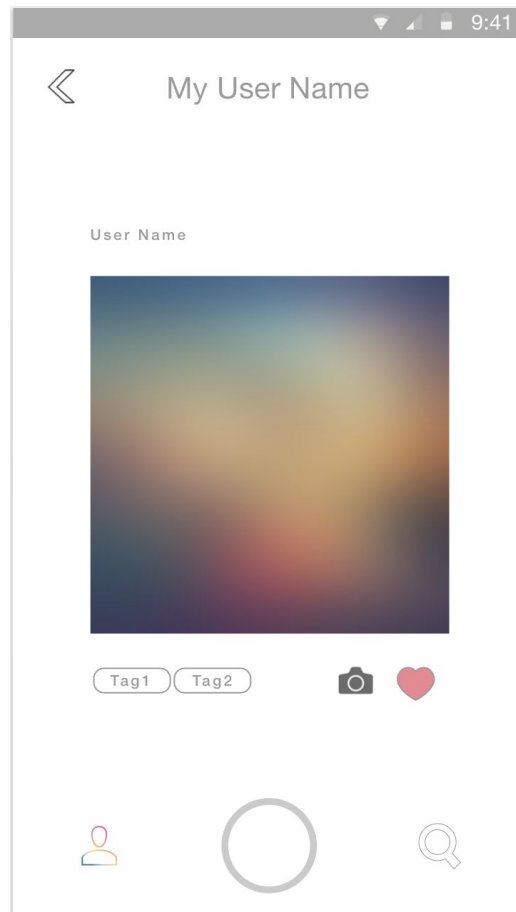
Figure 20. User Tab, Tattoo View Page

User is directed to this page if he/she clicks a design that another user uploaded on User Tab (i.e. from Liked section of his/her library). This page provides user to be able to view a design. User can change like status of the design, by clicking the heart figure or he/she can try the design by clicking camera button. It directs the user to AR Camera page with the selected design. Above the design, the user name of the person who uploaded the design is shown. User is directed to the page of the person who uploaded the tattoo if he clicks on it. By clicking back button user is returned to the previous page on User Tab he/she visited.
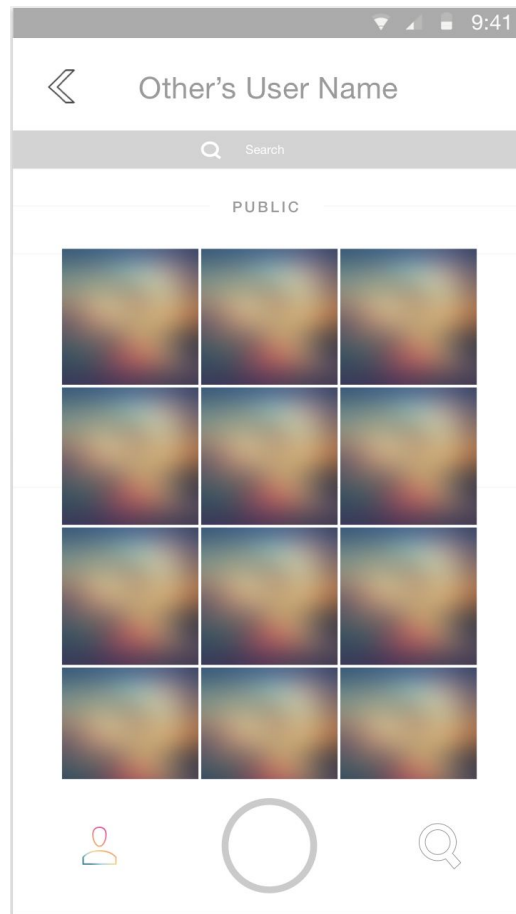
Figure 21. User Tab, User Page of Another User

       User can be lead to this page by clicking a username, that can be seen above the tattoo design in a Tattoo View Page on User Tab. It includes only the expanded version of public tattoos of the related user. Search can be made through these tattoos by clicking the "Search" field at the top of the page. Displayed designs is shown as updated according to search. The user can click to a design below the Public section, which will lead him/her to Tattoo View Page of the related tattoo. Back button leads the user to the previous page he/she visited in User tab.

2.5.5.4 Discover Tab

The left tab leads the user to "Discover Tab" when it is clicked, while user is on another tab. "Discover Tab" involves three different type of pages: "Discover Page", "Tattoo View Page" and "User Page of Another User".
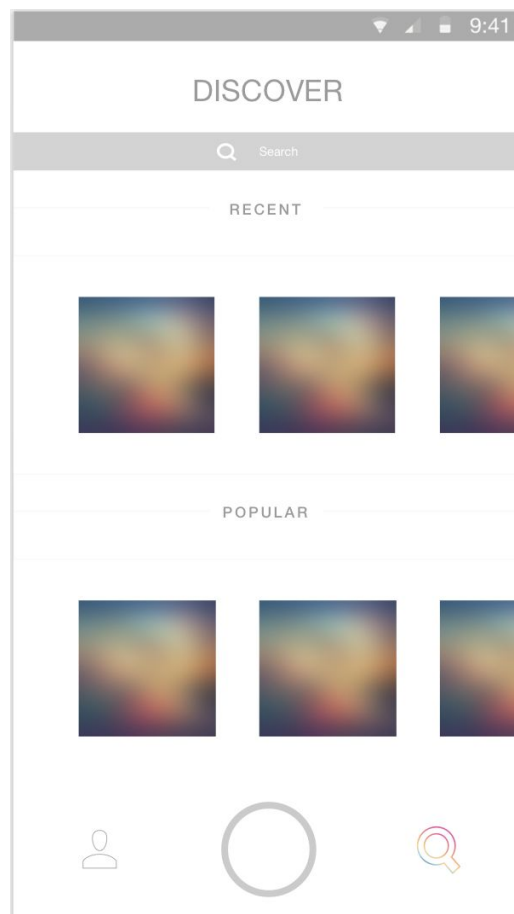
2.5.5.4.1 Discover Page

Figure 22. Discover Tab, Discover Page

"Discover Page" is the main page that is displayed when the user clicks on Discover Tab. Uploaded designs of other users can be viewed through this page. The page divided into two sections: "Recent" and "Popular". "Recent" section includes recently uploaded public tattoos of other users. It refreshes in every X minutes. "Popular" section includes most popular ones among uploaded public tattoos.

When the user clicks a tattoo from "Recent" or "Popular" section, he/she will be directed to "Tattoo View Page" on Discover Tab to view the related tattoo. User can also search through these two sections by using "Search" field at the top of the page. "Recent" and "Popular" sections is updated according to the search. Furthermore, these sections can be expanded by clicking the section title such as in Figures 23 & 24.

Figure 23. Discover Tab, Expanded Recent View

Figure 24. Discover Tab, Expanded Popular View
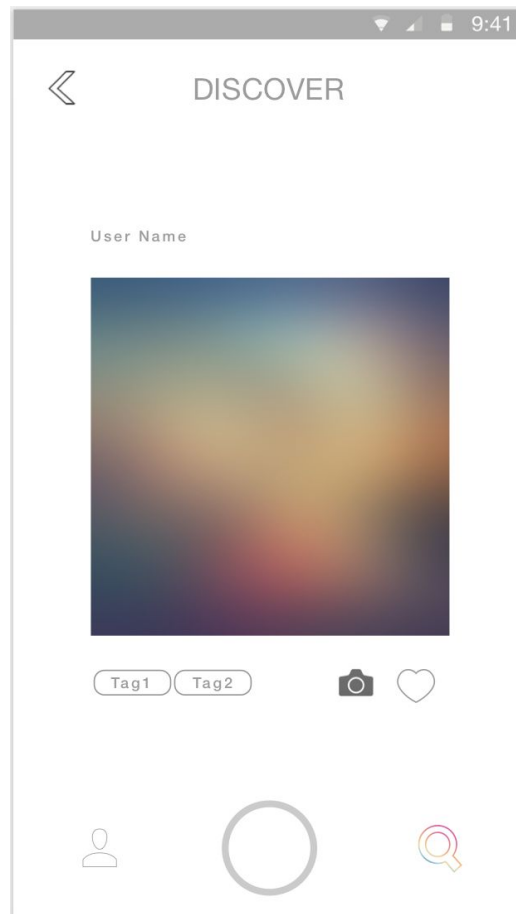
2.5.5.4.2 Tattoo View Page

Figure 25. Discover Tab, Tattoo View Page

User is directed to this page if he/she clicks a design that another user uploaded on Discover Tab (i.e. from Recent or Popular sections of the Discover Page). Displayed content is same with Tattoo View Page on User Tab. This page provides user to be able to view a design that another person uploaded. User can change like status of the related tattoo design, by clicking the heart figure or he/she can try it by clicking camera button. It directs the user to AR Camera page with the selected design. Above the design, the user name of the person who uploaded the design is shown. User is directed to the page of the person who uploaded the tattoo if he clicks on it. By clicking back button user is returned to the previous page in Discover Tab he/she visited.
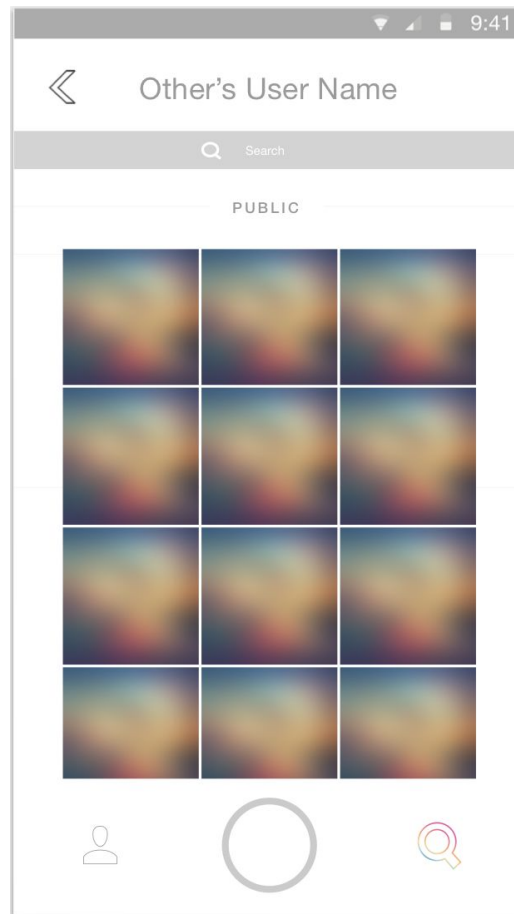
Figure 26. Discover Tab, User Page of Another User[2]

User can be lead to this page by clicking a user name, that can be seen above the tattoo design in a Tattoo View Page on Discover Tab. It includes only the expanded version of public tattoos of the related user. Search can be made through these tattoos by clicking the "Search" field at the top of the page. Displayed designs updated according to search. The user can click to a design below the Public section, which will lead him/her to Tattoo View Page of the related tattoo. Back button leads the user to the previous page he/she visited on Discover Tab.

3.References

[1] Developer.android.com. (2016). *Download Android Studio and SDK Tools | Android Studio*. [online] Available at: https://developer.android.com/studio/index.html [Accessed 7 Nov. 2016].

[2] Sketchapp.com. (2016). *Sketch - Professional Digital Design for Mac*. [online] Available at: https://www.sketchapp.com/ [Accessed 7 Nov. 2016].