

SOFTWARE REQUIREMENTS SPECIFICATION

RESEARCH LAB MANAGEMENT SYSTEM

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1 Introduction

1.1 Purpose

Research Lab Management System (RLMS) is a website intended to feature all lab-related information at one place, including lab members, research work, upcoming events, awards, and publications. Additionally, lab members should be able to modify the information presented on the website.

This document is meant to delineate the features of RLMS, to serve as a guide to the developers on the one hand and a software validation document for the prospective client, on the other.

1.2 Scope

We describe what features are in the scope of the software and what are not in the scope of the software to be developed.

1.2.1 In Scope:

- Displaying lab facilities and members' information, including contact information and personal website, to ease internal and external collaborations.
- Displaying achievements of the lab members in terms of publications, awards and other accolades for an increased public presence of the lab. Photos and videos of the lab would also be available in the gallery and on the home page.
- Displaying information about conferences, seminars and workshops and tracking deadlines of conferences.
- All the above information on the website could be added and modified by the members of the lab (including admin) for whom we have **user authorization** facility.
- Deleting old or expiry information and deleting/modifying user accounts from the backend.

1.2.2 Out of Scope:

- The website itself doesn't facilitate any interaction between prospective collaborators.

- As of now, details of upcoming conferences have to manually added by a lab member. If time permits, we'll try to track the deadlines of specific conferences automatically.
- This is an informative website about the lab, mostly an overview. One may have to require to contact specific person(s) for further details about ongoing research experiments. Internal affairs like lab budgets are not included in the website.

1.3 Definitions, Acronyms, and Abbreviations

1.3.1 Acronyms and Abbreviations

RLMS Research Lab Management System

SRS Software Requirements Specification

1.3.2 Definitions

Student A present student of the lab. They have a lab user account and can post information on the website.

Mentor They mentor **Students** and can create **Mentor/Student/Visitor/Alumni** profiles along with posting information on the website.

Member A **Mentor** or a **Student** having a lab user account.

Visitor A visitor of the lab.

Alumni An ex-**Student** of the lab. Both **Visitors** and **Alumni** don't have a user account, and their profiles are maintained by mentors.

User A **Member** or an outsider viewing the site.

1.4 References

Appendix: User Screens

Note: The user screens at the end are for illustration purposes only and the final website may be different but close to these diagrams, preserving its meaning.

1.5 Overview

The rest of this SRS is organized as follows: Section 2 gives an overall website description. It gives what level of proficiency is expected of the user, some general constraints while making the software, and some assumed assumptions and dependencies. Section 3 gives specific requirements which the software is expected to deliver. Functional requirements are given by various use cases. Some performance requirements and design constraints are also given. Section 4 gives some possible future extensions of the system. Finally, the appendix in Section 5 has some example user screens.

2 Overall Description

2.1 Product Perspective

RLMS aims to provide visitors and lab members with detailed information about all the lab activities and announcements in one place.

RLMS is intended to be a stand-alone website and should not depend on the availability of other databases. It should be compatible with well-known browsers like Google Chrome, Safari and Firefox.

2.2 Product Functions

RLMS should support the following use cases:

Class of use cases	Use cases	Description of use cases
Use cases related to Authorization	Login	Login into RLMS
	Forgot Password	Resets password via a link sent to a mail
	Change Password	Updates RLMS password
	Log Out	Log out of RLMS
Use cases related to Profile	View Profile	Members can view their own profile.
	Edit Profile	Information about a member is displayed, which can be edited.
	Add Conference	Add conference information to be displayed on the conferences table.
	Post Announcement	Add details of an announcement to be displayed on Home Page.
	Post News	Add details of a 'news', to be displayed on Home Page.
	Upload Pictures to Gallery	Uploads Images with a caption which will be displayed in Gallery.
	Add Alumni	Add required information about alumni.
	Add Visitors	Add information about visitors.
General and Home-related use cases	Hover over options	To see the drop-down menu under each option.
	Scroll up/down	Scroll up and down on a webpage
	Zoom in/out	make a web page bigger/smaller per the user's convenience.
	Click any hyperlink on Home Page	Opens a particular website/webpage.
	Slide photos	Allows website users to navigate through a range of photos quickly.
Use cases related to Research	Responsive Webpage	Website adjusts itself according to different aspect ratios of browser.
	View Seminars	A table having a list of seminars with their details appear.
	View Conferences	A table having a list of Conferences with their details appear.
	View Awards	A table having a list of Awards with their details appear.
	View Publication	A table listing publications with all the necessary details appear.
	View Inventory	A table listing inventory developed in a lab and their details appear.
Use cases related to Members	View Facilities	A table listing all the lab facilities appears.
	View Mentors	It shows information about the Mentors in a lab.
	View Students	Shows information about each student in a lab.
	View Alumni	Display information about Alumni with their profile.
Use cases related to the Gallery	View Visitors	Display information about Visitors.
	Click on picture	A picture in the gallery is displayed on full-screen.
	Play video	A video starts playing on the screen, and other video tools appear.

2.3 User Characteristics

- Anyone on the internet viewing the site can be the user.
- The user should be comfortable with navigating a usual website.

2.4 Principal Actors

- The principal Actors in RLMS are User, System, and Devices.

2.5 General Constraints

- RLMS requires an Internet connection for full working.
- RLMS is accessible through a different range of devices.

2.6 Assumptions and Dependencies

- Full working of RLMS depends on the availability of Internet connection.
- All the information about activities in the Research lab is added/updated by the lab members only.
- Information related to activities, news, and announcements is accessible to anyone viewing the website.
- At least one person in the admin should be comfortable with adding data from the backend, like creating initial user ID and passwords and adding inventory and facilities' details onto the database.

3 Specific Requirements

3.1 Functional Requirements

Following are the functional requirements for our system given by use cases

3.1.1 Use cases related to Authorization

1. **Use Case 1:** Login

Primary Actor: Members

Precondition: Nil

Main Scenario:

- a) Open website, click on login in the top-right corner.
- b) New page opens for login, asking username, password in boxes, login button, and change/forgot password in bottom.
- c) User gives username and password.
- d) System does authentication.
- e) "Successfully logged in!" is displayed, and the login option changes to user's picture.

Alternate Scenario 1: User gives wrong username or password.

- a) In this case, Login page gives an alert "Invalid username/password, please try again."

Alternate Scenario 2: User doesn't fill all fields before 'Submit'.

- a) A prompt saying "Fill in all the required fields!" is displayed.

2. **Use Case 2:** Forgot password

Primary Actor: Members

Precondition: Login page is open.

Main Scenario:

- a) User clicked on forgot/change password option below login button.
- b) It opens new page with first half for forgot password and second half for change password.
- c) In forgot password section, two boxes for username and institute email id are present.
- d) User enters details and clicks on send button.

- e) This will send a reset password link to respective mail id. The mail says link is valid for 10 minutes.
- f) When user clicks on link within time. It will direct user to a page asking to enter new password and re-enter new password and submit.
- g) The forgot/change password page now returns prompt "Your password has been successfully changed!" and button to go back to login page.
- h) User clicks on that button, now login page opens and they can login with new password.

Alternate Scenario 1: Wrong username/email id

- a) User enters wrong username or email id in the 'Forgot password' section.
- b) Page prompts invalid credentials.

Alternate Scenario 2: Didn't click reset link on time.

- a) User clicks on the reset link after 10 minutes.
- b) A blank page opens: "Link expired".

3. Use Case 3: Change Password

Primary Actor: Member

Precondition: User has clicked 'Forgot/Change Password Option' from Login page

Main Scenario:

- a) It opens new page with first half for forgot password and second half for change password.
- b) In change password section, there will be four boxes, username, old password, new password and re-enter new password and a submit button.
- c) User enters all of them and clicks on 'Submit'.
- d) The forgot/change password page now returns prompt saying, your password has been successfully updated and button appears to help go back to login page.
- e) User clicks on that button, now login page opens and he can login with new password.

Alternate Scenario 1: Password is not up to mark

- a) User clicked on forgot/change password option down login button.
- b) It opens new page with first half for forgot password and second half for change password.
- c) In change password section, there will four boxes, username, old password, new password, re-enter new password, submit.
- d) User enters all of them and clicks on submit.
- e) A warning appears down saying your password must contain at least one special character, number and capital letter. Please try again.

- f) This repeats until user enters valid password. Then he/she can submit.
- g) The forgot/change password page now returns prompt saying, your password has been successfully updated and button appears for go back to login page.
- h) User clicks on that button, now login page opens and he can login with new password.

Alternate Scenario 2: Username/old password is invalid.

- a) A warning appears down saying invalid user details, please try again.
- b) This repeats until user enters valid password. Then he/she can submit.

Alternate Scenario 3: 'New Password' and 'Re-enter New Password' don't match.

- a) A prompt with 'New Password and re-entered New Password don't match' appears.
- b) This repeats until user enters the correct copy of the new password. Then he/she can submit.

4. **Use Case 4:** Log out

Primary Actor: Member/Visitor/Alumni

Precondition: User is logged in.

Main Scenario:

- a) User hovers over or clicks their profile picture on the navigation bar.
- b) User clicks on 'Log Out' from the drop down.
- c) User is logged out and website returns to it's start state, i.e., the home page.

3.1.2 Use cases related to Profile

1. **Use Case 1:** View Profile

Primary Actor: Member of lab as user

Precondition: User must be logged into their account already

Main Scenario:

- a) Hover on the profile picture coming on the homepage, a drop down list will be displayed.
- b) Click on "profile options" from the drop down list, user will be directed to his/her profile page.
- c) On profile page, user can view information related to his/her profile.

2. **Use Case 2:** Edit Profile

Primary Actor: Member/Visitor/Alumni

Precondition: User must be logged into their account and opened his/her profile page

Main Scenario:

- a) On profile page click on "Edit Profile" button.

- b) After this user can edit his/her profile details.
 - c) After editing the details, click on “submit” button to reflect the changes on profile page and the members’ page on the website.
3. **Use Case 3:** Add conference information
Primary Actor: Member of lab as user
Precondition: User must be logged into their account already, and open his/her profile page
Main Scenario:
- a) On profile page click on “Add Conference” button.
 - b) Add all the fields in Add conference page.
 - c) Click on “Add” button.
- Alternate Scenario 1: User did not add all fields of conference
- a) In this case, user will get message below that field “This field is required”.
 - b) When user add that required field, then user will be able to add conference.
4. **Use Case 4:** Post Announcement
Primary Actor: Member of lab as user
Precondition: User must be logged into their account already, and open his/her profile page
Main Scenario:
- a) On profile page click on “Post Announcement” button.
 - b) Add the Title and description about announcement in Add conference page.
 - c) Click on “Add” button, announcement will be posted on home page.
- Alternate Scenario 1: if Title or description is left blank
- a) On clicking “Add” button, user get a message “This field is required” below that field.
 - b) User need to fill that required field.
 - c) After that, user will be able to Post Announcement.
5. **Use Case 5:** Post News
Primary Actor: Member of lab as user
Precondition: User must be logged into their account already, and open his/her profile page
Main Scenario:
- a) On profile page click on “Post News” button.
 - b) Add the Title and description about News in Post News page.
 - c) Click on “Add” button, News will be posted on home page.
- Alternate Scenario 1: If Title or description is left blank

- a) On clicking “Add” button , user get a message “This field is required” below that field.
 - b) User need to fill that required field.
 - c) After that, user will be able to Post News.
6. **Use Case 6:** Upload Pictures to Gallery
Primary Actor: Member of lab as user
Precondition: User must be logged into their account already, and open his/her profile page
Main Scenario:
- a) On profile page click on “Upload Pictures to Gallery” button.
 - b) Add the Caption and upload images(in .jpg format) .
 - c) Click on “Upload” button, Image will be added to gallery.
- Alternate Scenario 1: if caption is left blank or image is not uploaded
- a) On clicking “Upload” button, user get a message “This field is required” below that field.
 - b) User need to fill that required field.
 - c) After that, user will be able to upload images.
7. **Use Case 7:** Add Alumni
Primary Actor: Mentors as user
Precondition: User must be logged into their account already, and open his/her profile page
Main Scenario:
- a) On profile page, click on “Add Alumni” button
 - b) Add all the details related to Alumni.
 - c) Click on “Add” button.
8. **Use Case 8:** Add visitors
Primary Actor: Mentors as user
Precondition: User must be logged into their account already, and open his/her profile page
Main Scenario:
- a) On profile page, click on “Add visitor” button
 - b) Add all the details related to Visitor.
 - c) Click on “Add” button.

3.1.3 Use cases related to Home

1. **Use Case 1:** Hover over nav-bar option

Primary Actor: Anyone viewing the website

Precondition: Website is open in landscape view.

Main Scenario:

- a) User hovers over “members”, “research” or “gallery” in the navigation bar.
- b) The drop down of the respective option is displayed.
 - i. Under “members”, ‘mentors’, ‘students’, ‘alumni’ and ‘visitors’ is displayed.
 - ii. Under “research”, ‘seminars’, ‘conference deadlines’, ‘awards’, ‘publications’, ‘inventory’ and ‘facilities’ is displayed.
 - iii. Under “gallery”, ‘photos’ and ‘videos’ is displayed.
 - iv. Under profile photo of a logged in user, ‘Profile Options’ and ‘Log Out’ are displayed.

Alternate Scenario 1: Hover out

- a) User hovers out of the navigation bar option and its sub-options.
- b) Sub-options disappear.

2. **Use Case 2:** Scroll up/down

Primary Actor: Anyone viewing the website

Precondition: Nil

Main Scenario:

- a) User scrolls anywhere on the screen except the navigation bar and the bottom pane.
- b) The webpage scrolls accordingly.

3. **Use Case 3:** zoom in/out

Primary Actor: Anyone viewing the website

Precondition: Nil

Main Scenario:

- a) User can zoom in/out anywhere on the website.
- b) The webpage zooms accordingly, with upper limit to zooming in.

4. **Use Case 4:** Click any hyperlink: nav bar options/ ‘>> Read More’

Primary Actor: Anyone viewing the website

Precondition: Nil

Main Scenario:

- a) User clicks on any hyperlink on the main screen. This could be any of the navigation bar (sub)options, links to the news/activities/events page or external website links on the bottom pane.

- b) The particular website/webpage opens.
- 5. **Use Case 5:** slide photos
 - Primary Actor: Anyone viewing the website
 - Precondition: Nil
 - Main Scenario:
 - a) Use clicks on the < or > icons on the sides of the pictures displayed on the main screen.
 - b) The picture to the left or the right are displayed on the click accordingly. The pictures form a loop.
 - c) The picture circle corresponding to the picture number of the picture enlarges.
- 6. **Use Case 6:** Responsive Webpage
 - Primary Actor: Anyone viewing the website
 - Precondition: Website is in portrait mode, as in a mobile screen or a laptop half-screen
 - Main Scenario:
 - a) The navigation bar options are removed and a single menu option denoted by three horizontal bars is displayed.
 - b) News, upcoming events, and activities are displayed one after the other instead of side by side.
 - c) Hovering over anything doesn't produce an action. The menu icon needs to be clicked on to display navigation bar options in vertical fashion and the options need to be clicked on to display sub-options, again in vertical.
 - d) A click outside the menu options hides the menu options.

3.1.4 Use cases related to gallery

- 1. **Use Case 1:** click on picture
 - Primary Actor: Anyone viewing the website
 - Precondition: The photos page of the gallery is open
 - Main Scenario:
 - a) User clicks on a picture displayed in the photos section of the gallery.
 - b) The picture gets displayed in full screen on the webpage, with a '×' option to exit full screen.
 - c) Pressing '×' brings the webpage back to its previous state.
- 2. **Use Case 2:** Play video
 - Primary Actor: Anyone viewing the website
 - Precondition: The videos page of the gallery is open.
 - Main Scenario:
 - a) User clicks on the play button displayed over any video.

- b) The video starts playing from the start with the following video tools.
 - i. A full screen option. Changes to exit full screen when it's playing in full screen.
 - ii. A timer displaying total play time and the current timestamp.
 - iii. A horizontal bar on which the user can click to take a video to a particular timestamp.

3.1.5 Use cases related to Research

1. Use Case 1: View Seminars

Primary Actor: Anyone viewing the website

Precondition: Nil

Main Scenario:

- a) User selects the option of "Seminars" from the drop down of Research on home page.
- b) Page having a list of Seminars with their details will be displayed.

2. Use Case 2: View Conferences

Primary Actor: Anyone viewing the website

Precondition: Nil

Main Scenario:

- a) User selects the option of "Conferences" from the drop down of Research on home page.
- b) Page having a list of Conference with their details will be displayed.

3. Use Case 3: View Awards

Primary Actor: Anyone viewing the website

Precondition: Nil

Main Scenario:

- a) User selects the option of "Awards" from the drop down of Research on home page.
- b) Page having a list of Awards will be displayed.

4. Use Case 4: View Publication

Primary Actor: Anyone viewing the website

Precondition: Nil

Main Scenario:

- a) User selects the option of "Publication" from the drop down of Research on home page.
- b) Page having a list of Publications will be displayed.

5. **Use Case 5:** View Inventory

Primary Actor: Anyone viewing the website

Precondition: Nil

Main Scenario:

- a) User selects the option of “Inventory” from the drop down of Research on home page.
- b) A new page opens displaying all the inventory developed in lab.

6. **Use Case 6:** View Facilities

Primary Actor: Anyone viewing the website

Precondition: Nil

Main Scenario:

- a) User selects the option of “Facilities” from the drop down of Research on home page.
- b) A new page opens displaying list of equipment available in the lab for research.

3.1.6 Use cases related to Members

1. **Use Case 1:** View Mentors

Primary Actor: Anyone viewing the website

Precondition: Nil

Main Scenario:

- a) User selects the option of “Mentor” from the drop-down of Members on home page.
- b) Page having the profile of Mentors displayed.
- c) Users can view more details about a mentor by clicking on the hyperlink on their name.

2. **Use Case 2:** View Students

Primary Actor: Anyone viewing the website

Precondition: Nil

Main Scenario:

- a) User selects the option of “Students” from the drop-down of Members on home page.
- b) Page having profiles of Students will be displayed.
- c) Users can view more details about a mentor by clicking on the hyperlink on their name.

3. **Use Case 3:** View Alumni

Primary Actor: Anyone viewing the website

Precondition: Nil

Main Scenario:

- a) User selects the option of “Alumni” from the drop-down of Members on home page.
- b) Page having the profile of Alumni will be displayed.

3.2 Performance Requirements

- 1. Response time of the web page should be less than 2 sec.
- 2. Website should support latest versions of Chrome, Firefox and Safari.

3.3 Design Constraints

- 1. Security: The databases in which the information added by members should be secured against malicious deformations.
- 2. Fault Tolerance: Data in the website should not be corrupted in case of system crash or power failure.

3.4 External Interface Requirements

- 1. Lab website home page consists of navbar, photos, upcoming events, news, activities and footer.
- 2. Navbar contains links for members, research, gallery and login. Detailed template of website is shown in appendix.

4 Future Extensions

4.1 Email Reminders

A feature where members of the lab can choose to be reminded of specific deadlines related to specific conferences of their interest via email can be implemented. Either that or the member can choose to be reminded of all conference deadlines through emails.

4.2 Automatic Loading of Conference Deadlines

Data mining can be used to find out the deadlines of specific conferences in a way that the program refreshes the details automatically by searching through the web periodically, without human intervention.

4.3 Search Bar

A Search Bar can be implemented for searching for words or regular expressions throughout the whole website for anyone who is unfamiliar with the organization of the website.

4.4 Fully Functional from Front End

Right now, we have some functions like creating User IDs that are to be done from the back-end, but we'll try to bring everything to the front-end so that even a novice user can manage and maintain the website easily.

5 Appendix: The user screens

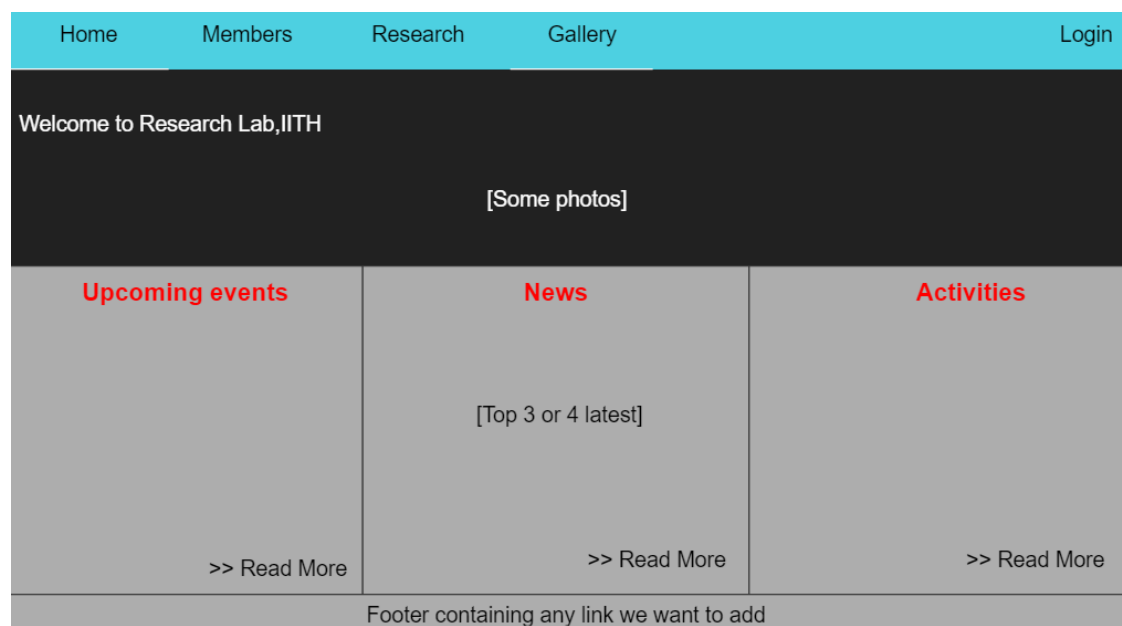


Figure 5.1: Home screen

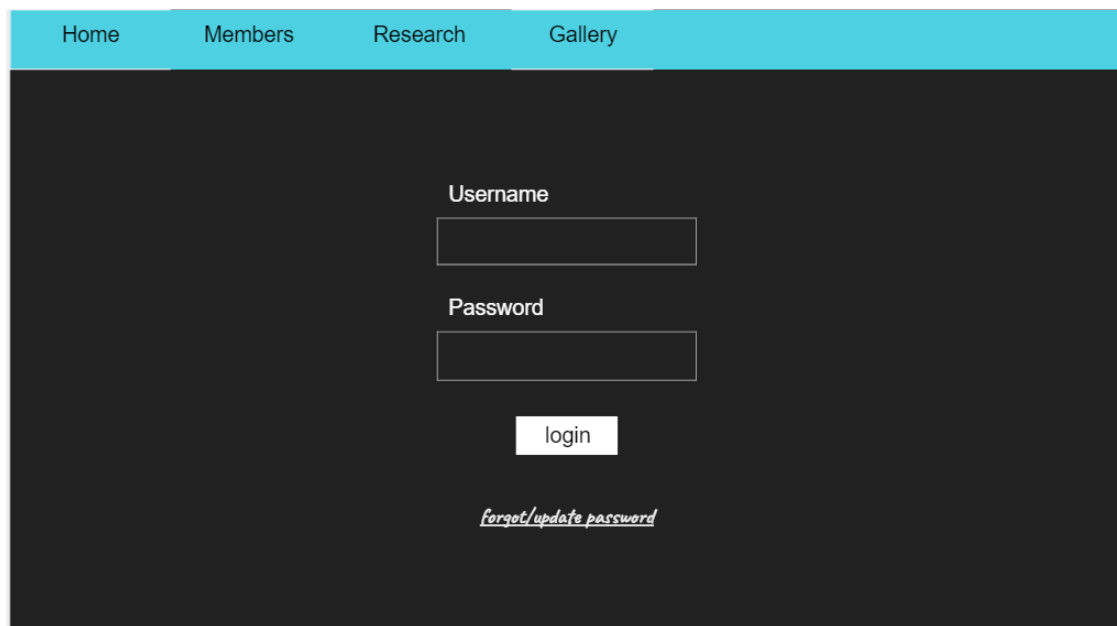


Figure 5.2: Login screen

Forgot password

Username

Institute Email id

Send reset link

Change password

Username

Old password

New password

Re-enter new password

Update password

Figure 5.3: Forgot/Change password

Home

Members

Research

Gallery

Edit Profile

Add conference

Post announcement

Post news

Upload pictures to gallery

History

Name

Mentor

Email

Research Area

Upload image(in .jpg format)

Cancel

Save

Submit

Figure 5.4: Profile options

Home Members Research Gallery

View Profile

Edit Profile

Add conference

Post Announcement

Post News

Upload pictures to gallery

Title

Description

Add

Figure 5.5: Post news in profile options

Home	Members	Research	Gallery		
Serial No.	Name	Department	Date-Time	Venue	Title

To view old seminars (Click here)

Figure 5.6: Seminars in research

Home	Members	Research	Gallery
------	---------	----------	---------

IITH Research Awards

Award Name (hyperlink)
Year
Description

Award Name (hyperlink)
Year
Description

Figure 5.7: Awards in research

Home	Members	Research	Gallery
------	---------	----------	---------

Students

Image
Name: _____
Email : _____

Image
Name: _____
Email : _____

Image
Name: _____
Email : _____

Image
Name: _____
Email : _____

Figure 5.8: Students in members

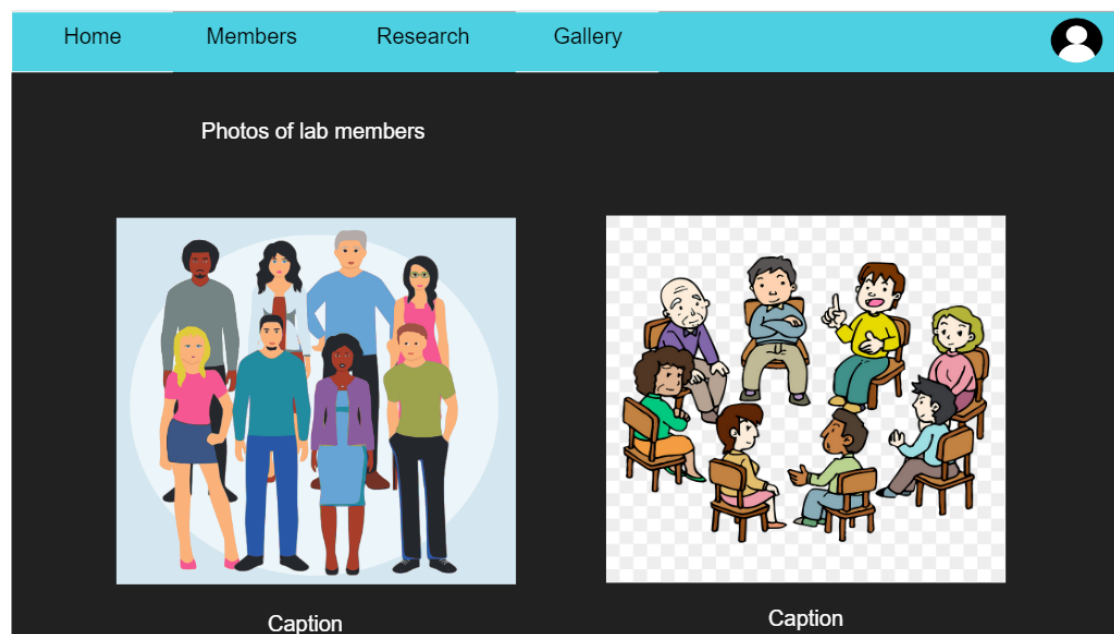


Figure 5.9: Photos in gallery