
SOFTWARE REQUIREMENTS SPECIFICATION

for

LAB/GROUP WEBSITE

Version 1.0

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1 Introduction

1.1 Purpose

The lab/group website is a platform designed to showcase the research activities of the Lab/Group of Dr. Puneet Gupta. The website provides information about the lab/group, its research focus, publications, projects, and events. The website's primary objective is to enhance the lab/group's visibility and improve its communication with the wider scientific community. The website is also designed to serve as a resource for internal and external stakeholders and facilitate group collaboration and communication. This Software Requirements Specification (SRS) document outlines the functional and non-functional requirements of the lab/group website.

1.2 Document Conventions

This document uses the default LaTeX serif font, Computer Modern, throughout the entire document. Header sections use bold font. Any part of this document that is not a header of some kind uses size 14 font. Half-inch margins are maintained throughout this document.

1.3 Intended Audience and Reading Suggestions

This project is a prototype for a lab management website and is mainly intended to be used by Dr. Puneet Gupta and his research group, along with students of IIT Indore, and external users for which this website would serve as a gateway of information and insight in the lab activities of the concerned lab group. This SRS is meant to be read by the developers, and group members, working on the project, Dr. Puneet Gupta, and concerned Teaching Assistants, whose guidance was used extensively in the production of this website and related documents.

1.4 Project Objectives

The objectives of the lab/group website project are as follows:

- To create a user-friendly and visually appealing website that represents the lab/-group's identity and promotes its research and activities.
- To provide up-to-date and accurate information about the lab/group's research, publications, members, and events.

- To facilitate communication and collaboration among lab/group members, as well as with external partners and stakeholders.
- To ensure that the website is secure, reliable, and scalable to accommodate future growth and changes.

2 Overall Description

2.1 Product Perspective

The lab website serves as a central repository for all data pertaining to Dr. Puneet Gupta's research lab. The website clearly lists and presents all of the lab's data, including its members, publications, contact information, achievements, etc. The website's objective is to offer all of these information presented in a manner and interface that is simple to use.

2.2 User Classes and Characteristics

Lab website has basically two types of users.

- Lab Members
 - Lab Head
 - Lab Members
- External users

2.3 Operating Environment

The website can be used on any operating system, including Mac, Windows, Linux, etc. To maximise the website's running capability, running it on a server with a server-oriented operating system is recommended. Additionally, the server software must be supported by the operating system that is being used.

2.3.1 Operating system

This system is cross-platform.

2.3.2 Server

This website uses Django as its server software.

2.3.3 React

The project will be implemented using React framework owing to its simplicity, functionality, and ability to assist creation of efficient and interactive websites.

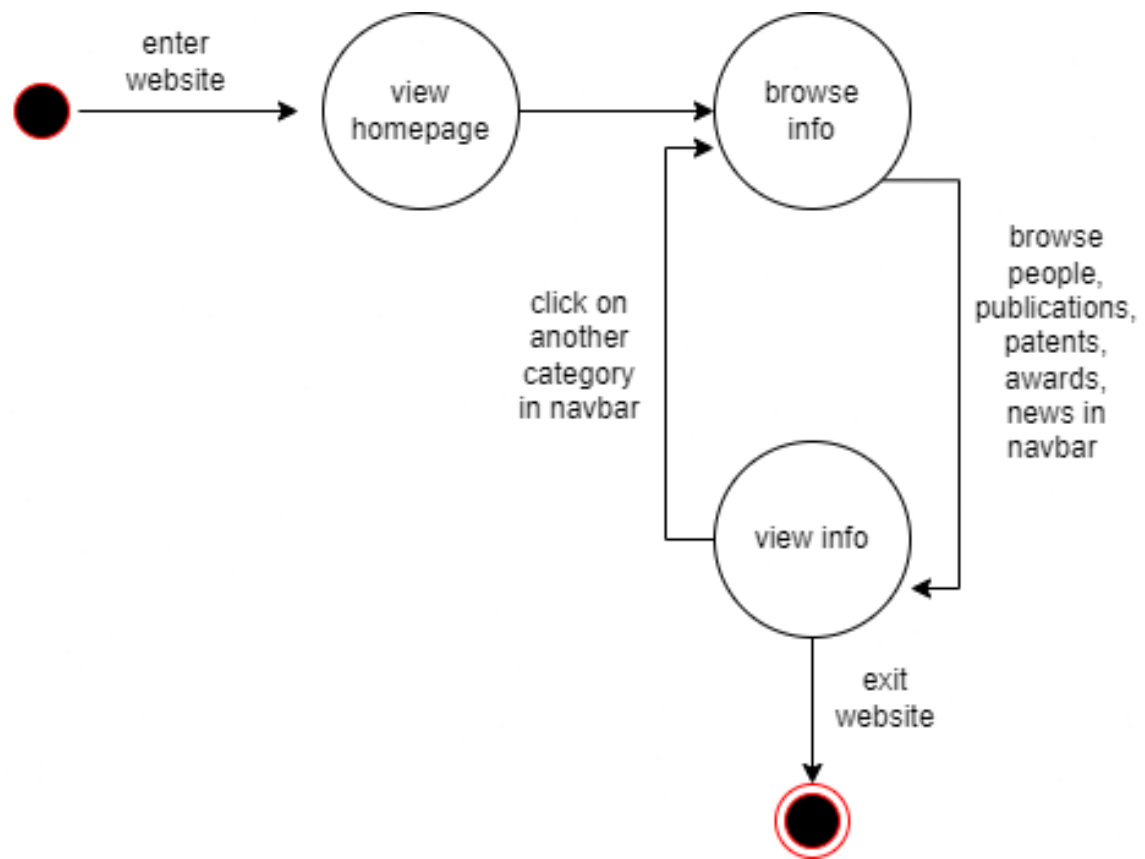


Figure 2.1: State Diagram representing entire workflow

2.4 UML diagrams

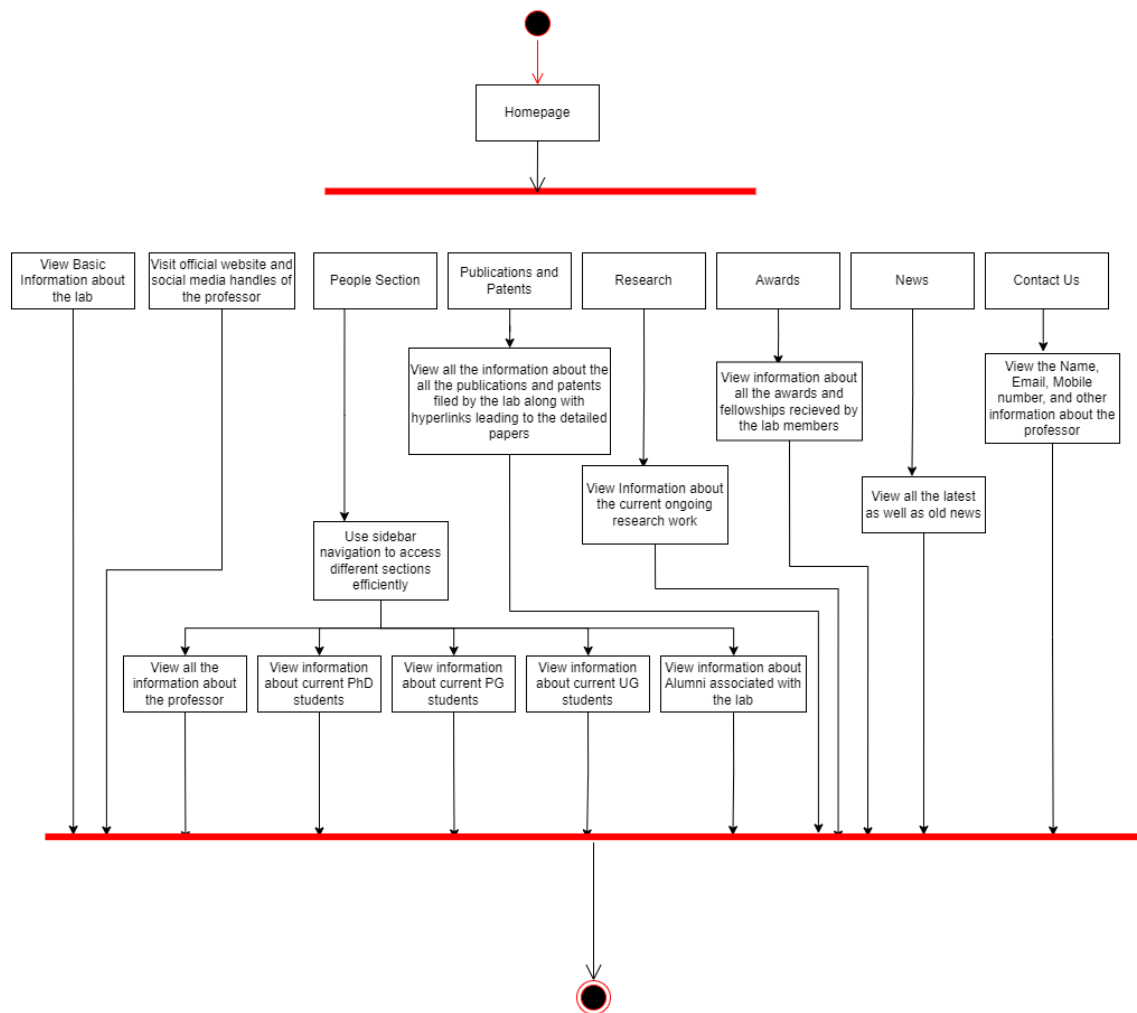


Figure 2.2: Activity diagram representing a user's perspective

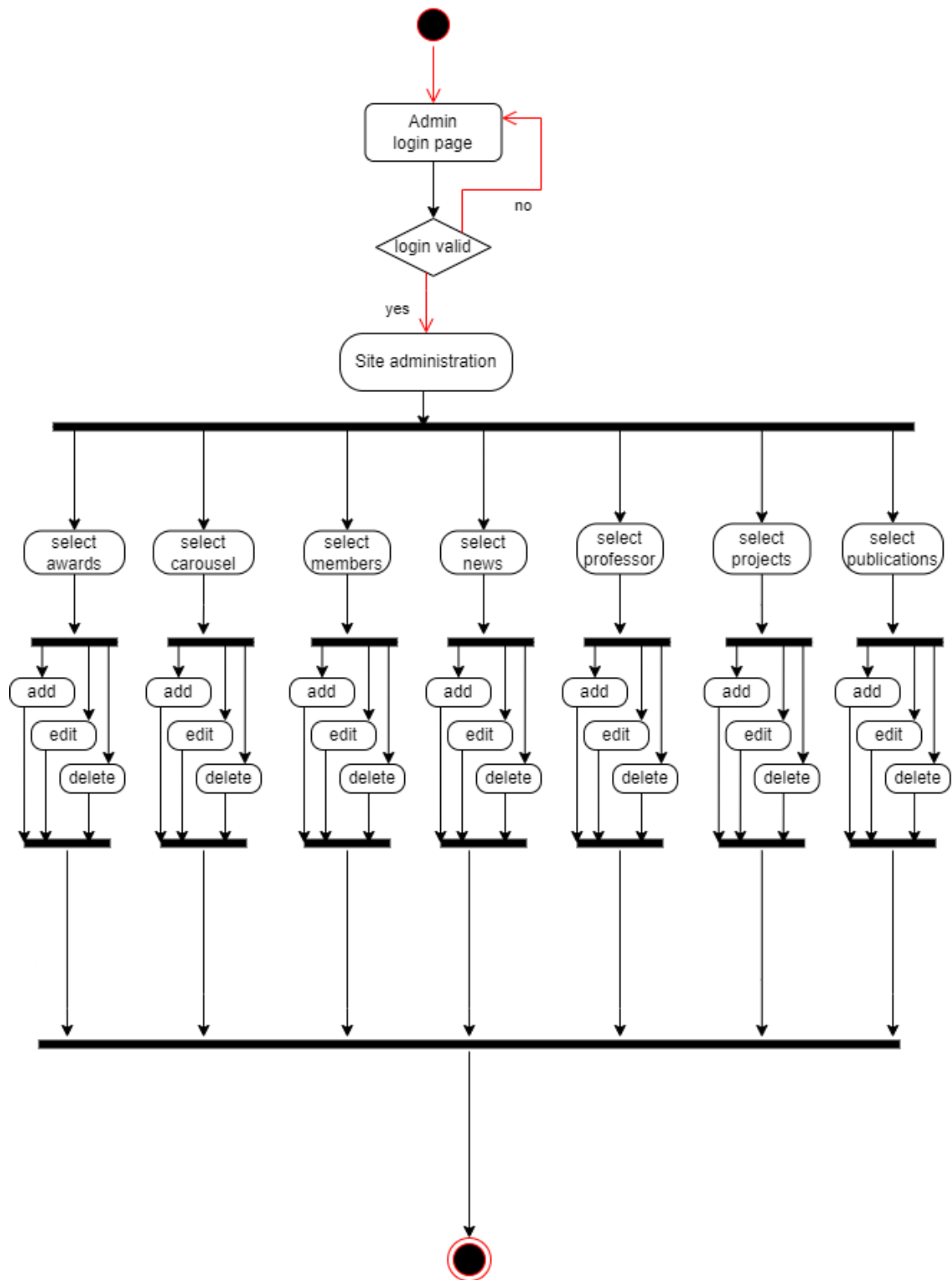


Figure 2.3: Activity Diagram representing the Lab head's perspective

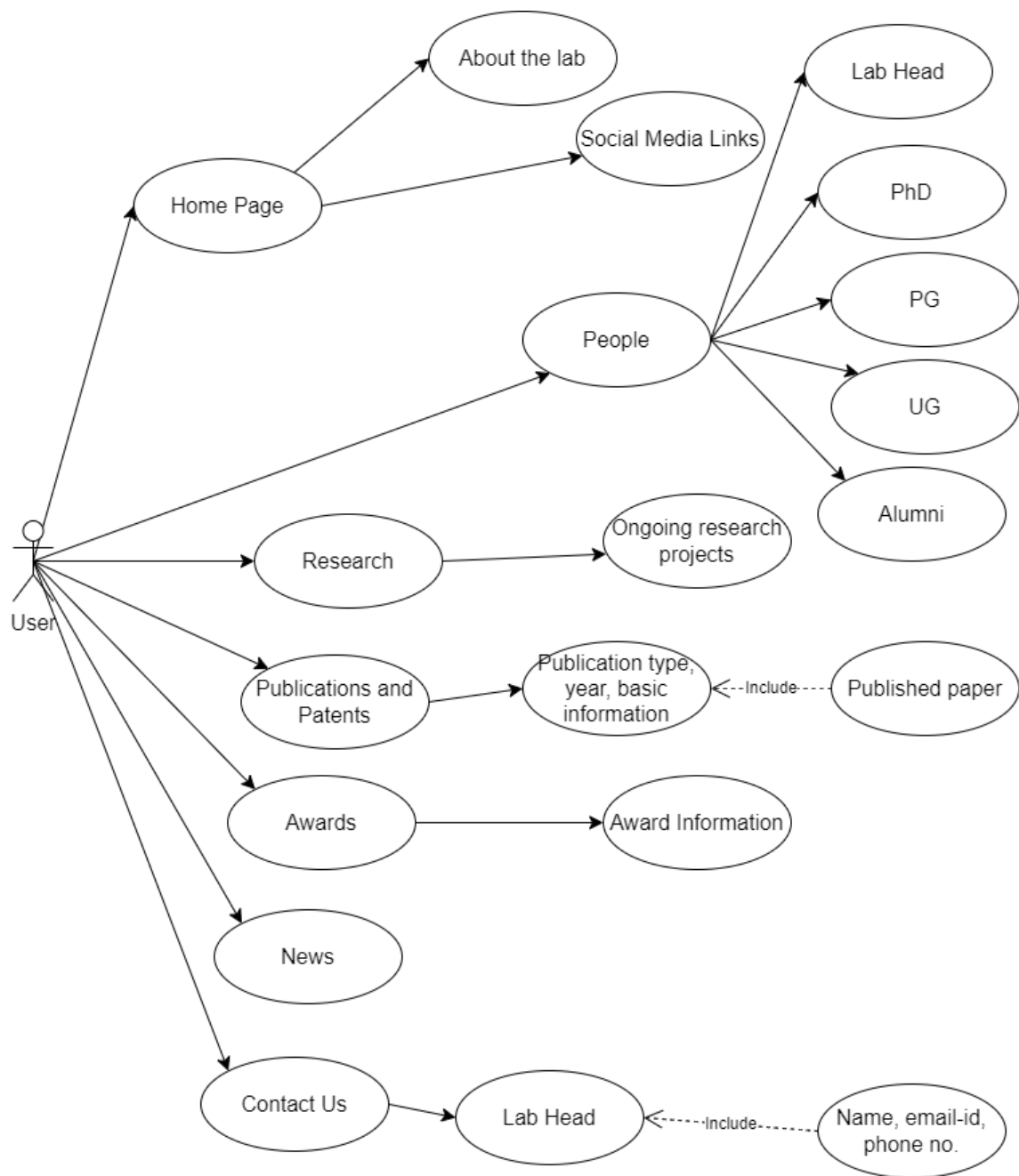


Figure 2.4: Use Case Diagram

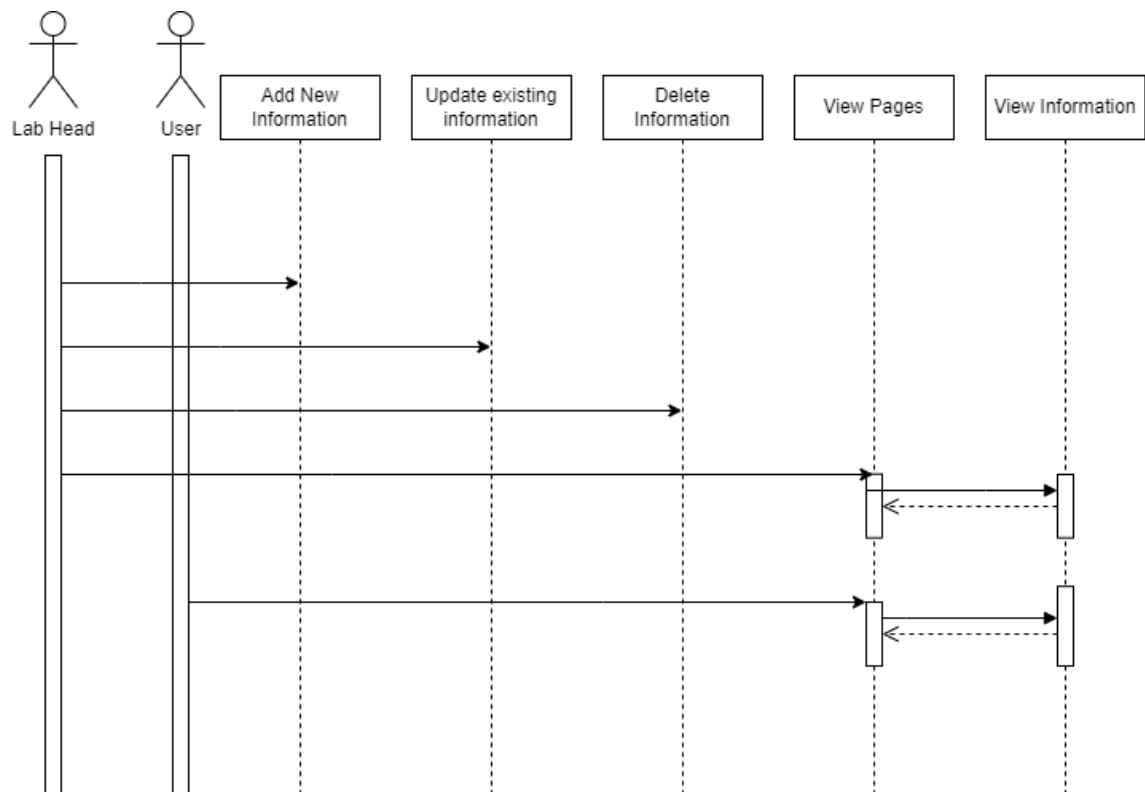


Figure 2.5: Sequence Diagram

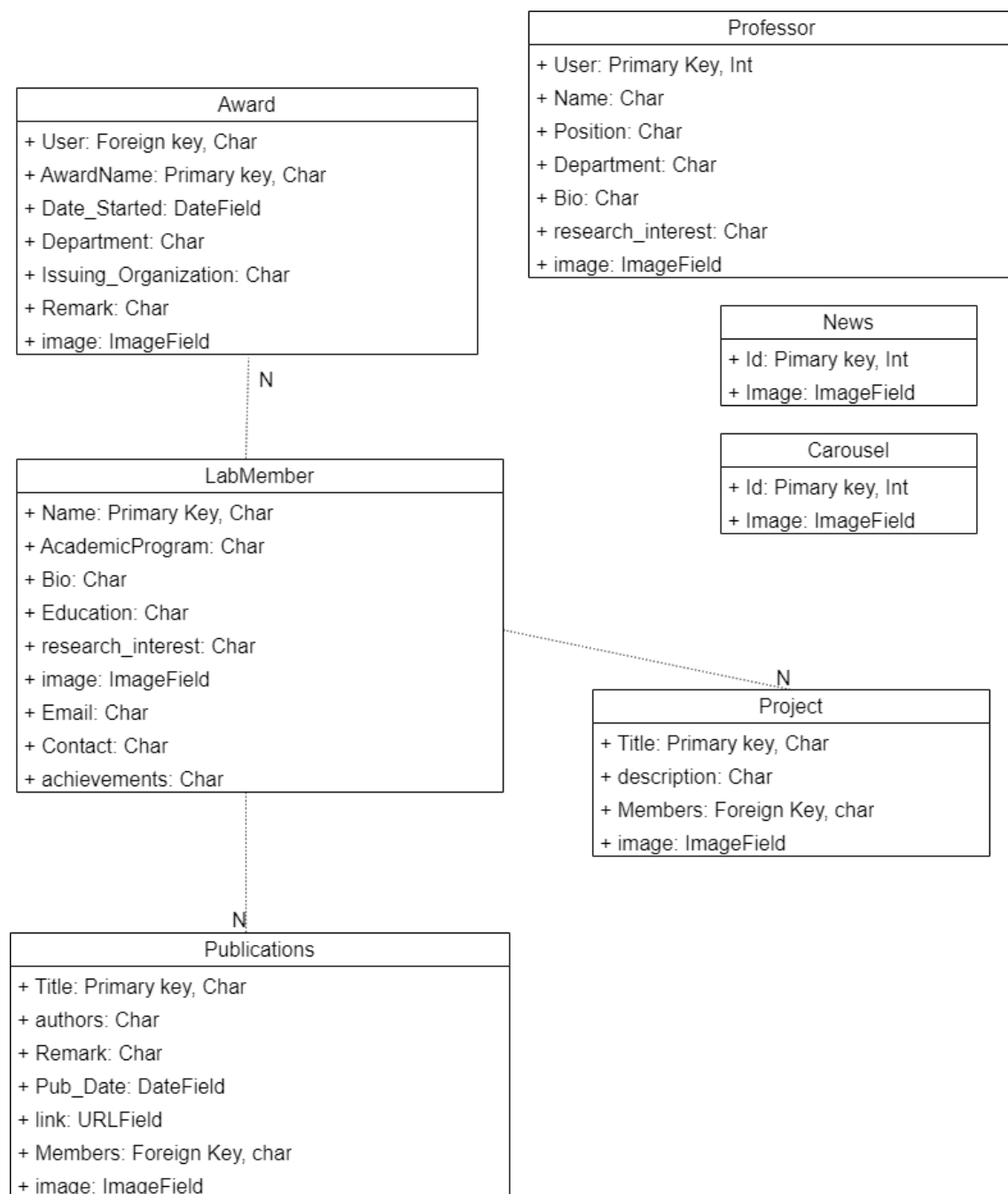


Figure 2.6: Class Diagram

3 Features and Functionality

The lab/group website will include the following features and functionality:

3.1 Home Page

The home page will serve as the entry point for the website and provide a summary of the lab/group's research, activities, and news. The following elements will be included:

1. Header: The header will include the lab/group's logo, a navigation bar, and a search bar.
2. Hero section: The hero section will include a banner image or video, a headline, and a call-to-action button.
3. Lab Head section: This section will contain a brief introduction of the lab head consisting of information such as position, designation, and an overview of the basic research interests of the Lab.
4. Events section: The events section will contain a carousel of five to ten images highlighting the events and activities partaken in by the lab members.
5. About section: The about section briefly overviews the lab/group's history, mission, and goals. It would contain quick links redirecting to recent publications, activities, and/or news articles.
6. Resources section: The resources section will provide links to relevant external resources, such as funding opportunities, data repositories, and tools.
7. Footer: The footer will include copyright information, social media links, and quick links to important pages.

3.2 Members Page

The members page will list the lab/group's current members and their roles and provide contact information and links to individual profiles. The following elements will be included:

1. Header: The header will include the lab/group's logo and a navigation bar.
2. Hero section: The hero section will include a banner image or video and a headline.

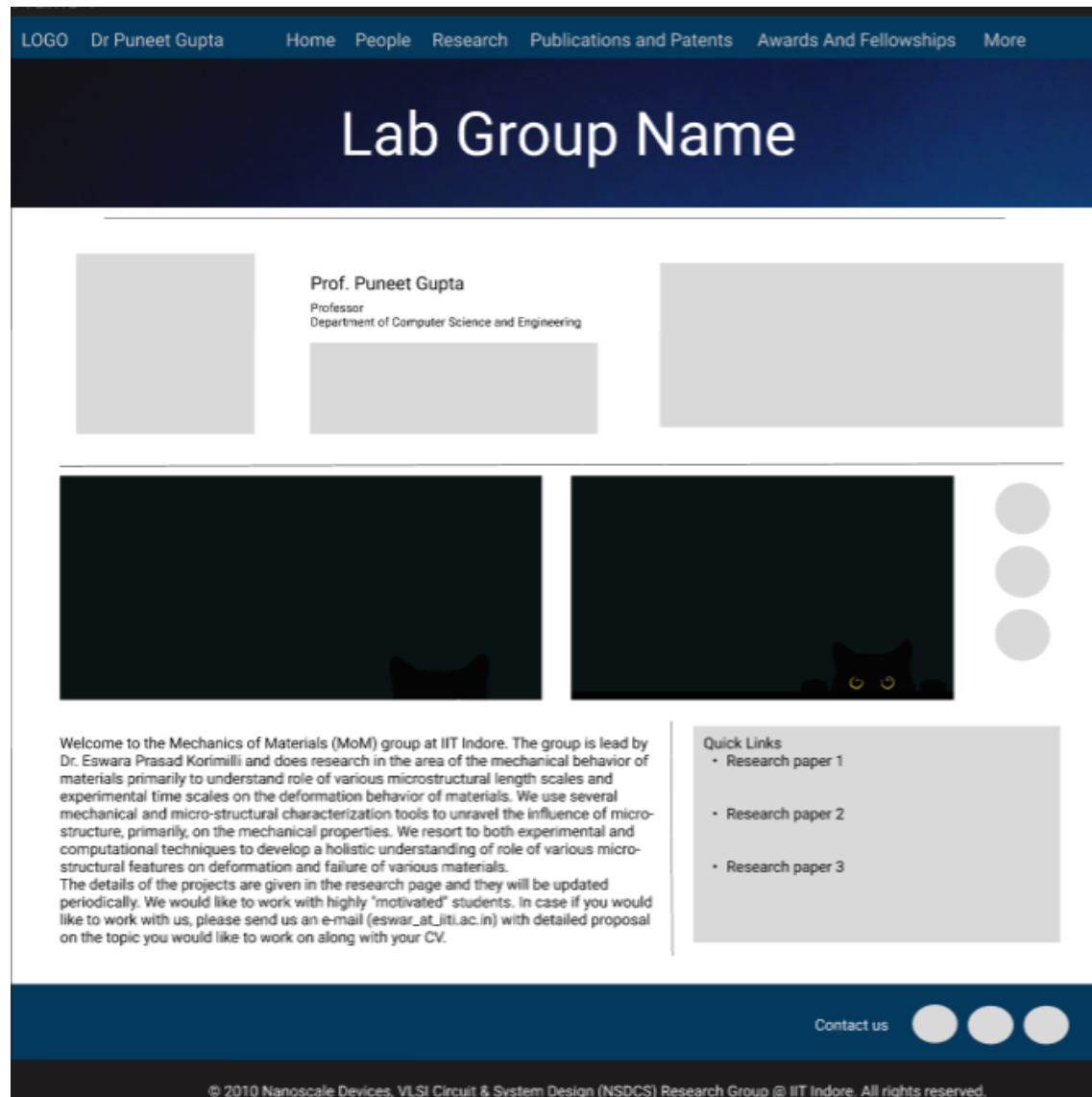


Figure 3.1: Homepage Wire frame

3. Sidebar: It will contain quick links to access the list of people from different departments.
4. Faculty section: The faculty section will list the lab/group's faculty members, including their names, titles, and research interests.objectives, methods, and outcomes.
5. Students section: The students section will list the lab/group's graduate and undergraduate students, including their names, degree programs, and research projects.
6. Alumni section: The alumni section will list the lab/group's former members, including their names, positions, and current affiliations.
7. Footer: The footer will include copyright information, social media links, and quick links to important pages.

3.3 Research Page

The research page will showcase the lab/group's research projects. The following elements will be included:

1. Header: The header will include the lab/group's logo and a navigation bar.
2. Hero section: The hero section will include a banner image or video and a headline.
3. Projects section: The projects section will provide information about the lab/-group's current and past research projects, including their objectives, methods, and outcomes.
4. Collaborations section: The collaborations section will provide information about the lab/group's collaborations with other research groups, institutions, and industries.
5. Footer: The footer will include copyright information, social media links, and quick links to important pages.

3.4 Publications Page

The Publications page will showcase the lab/group's Publications, patents, and achievements. The following elements will be included:

1. Header: The header will include the lab/group's logo and a navigation bar.
2. Hero section: The hero section will include a banner image or video and a headline.

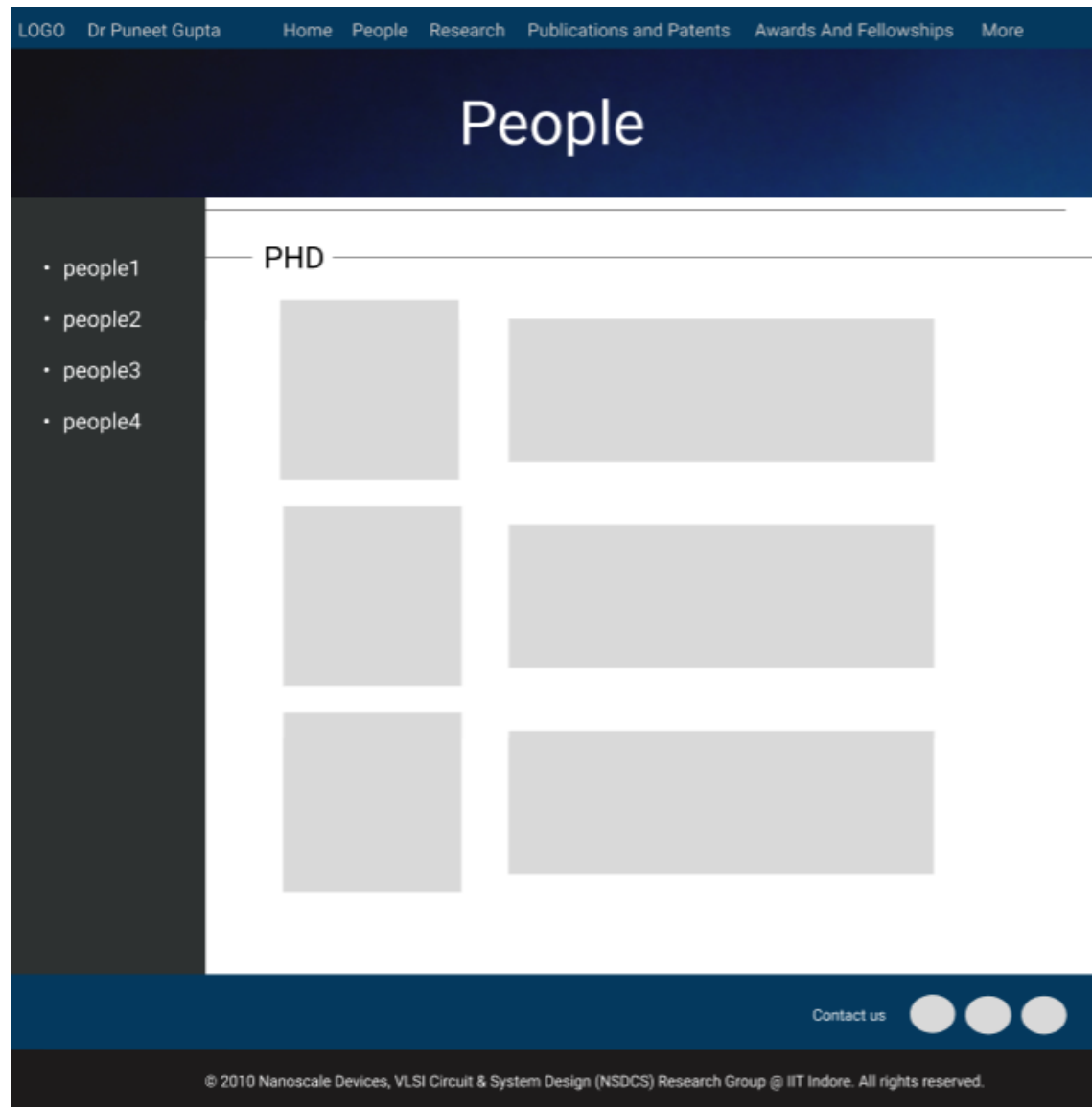


Figure 3.2: People Wire frame

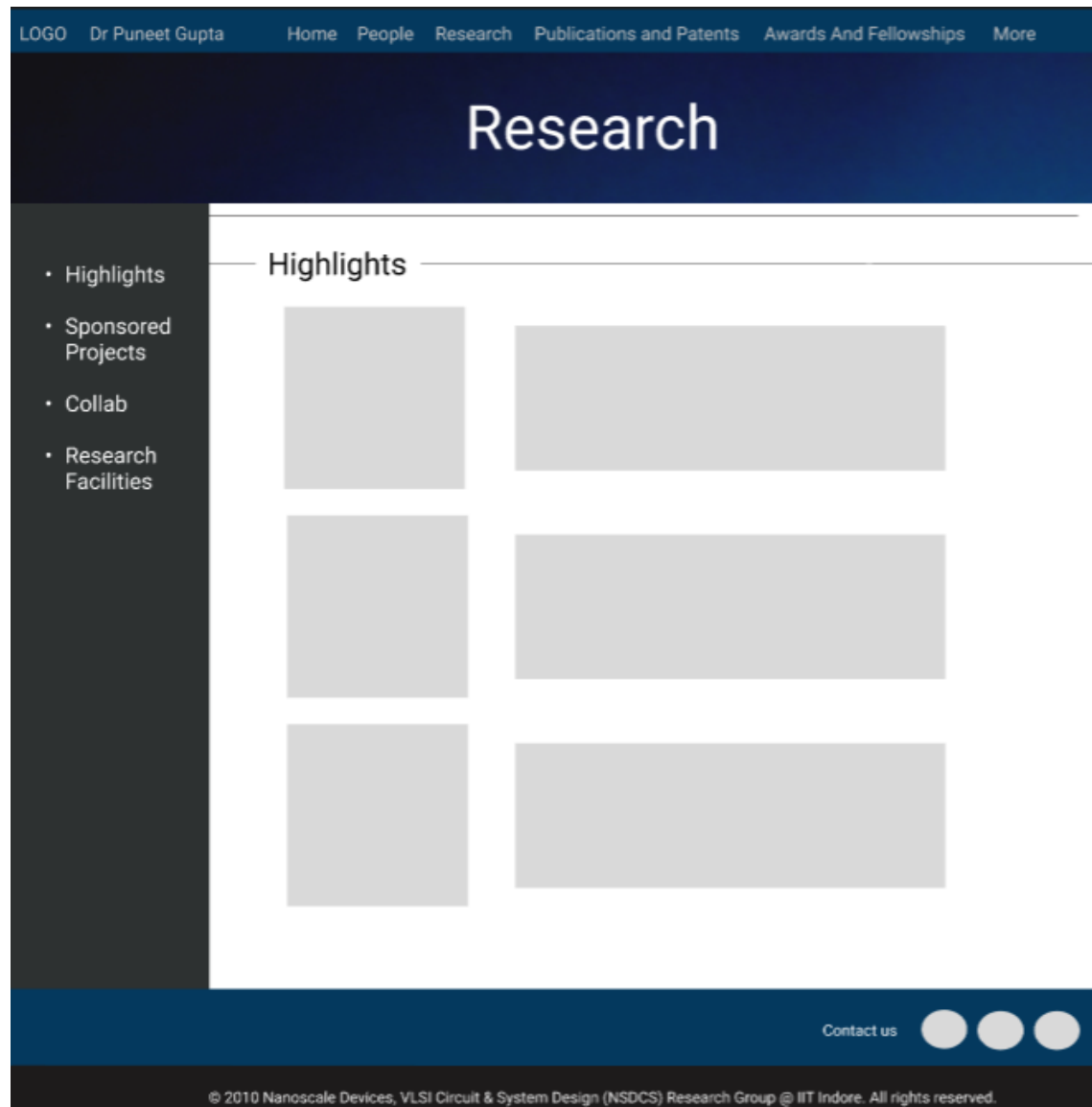


Figure 3.3: Research Wireframe

3. Projects section: The projects section will provide information about the lab/-group's current and past publications and patents, including their objectives, methods, and outcomes.
4. Collaborations section: The collaborations section will provide information about the lab/group's collaborations with other research groups, institutions, and industries.
5. Footer: The footer will include copyright information, social media links, and quick links to important pages.

3.5 Awards Page

The events page will list all the awards, fellowships, and achievements of all lab members. The following elements will be included:

1. Header: The header will include the lab/group's logo and a navigation bar.
2. Hero section: The hero section will include a banner image or video and a headline.
3. Awards section: The Awards section will contain a list of all the awards received by the lab members, along with relevant details, such as award name, receiving date, issuing organisation, etc.
4. Fellowships section: The Fellowships section will contain a list of all the Fellowships received by the lab members, along with relevant details, such as the name, receiving date, issuing organisation, etc.
5. Achievements: The Achievements section will contain a list of all the significant achievements of the lab members, along with relevant details.
6. Footer: The footer will include copyright information, social media links, and quick links to important pages.

3.6 About Page

The about page will provide more detailed information about the lab/group, including its history, mission, and goals. The following elements will be included:

1. Header: The header will include the lab/group's logo and a navigation bar.
2. Hero section: The hero section will include a banner image or video and a headline.
3. Mission and vision section: The mission and vision section will provide a brief overview of the lab/group's mission and vision.

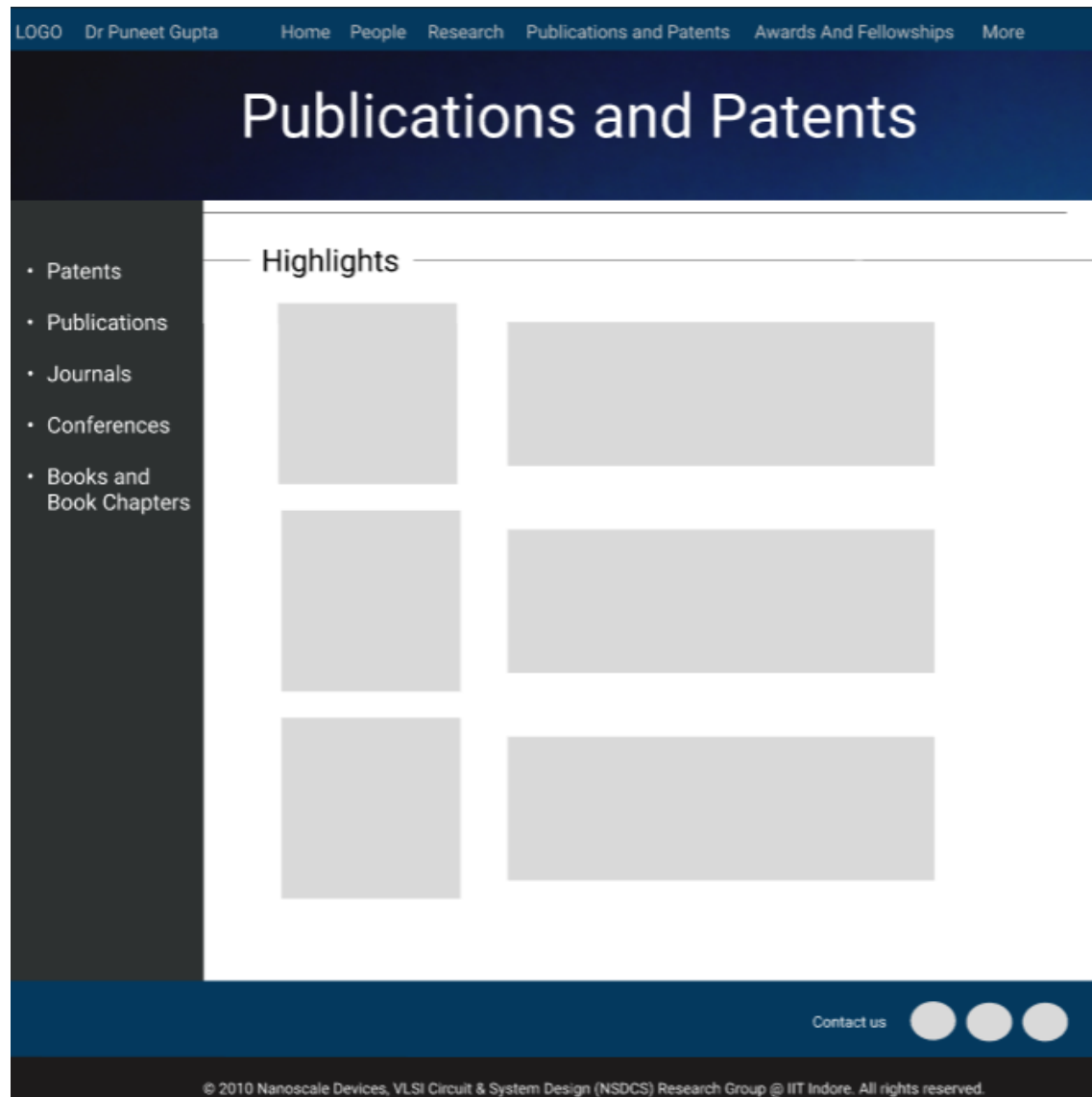


Figure 3.4: Patents and Publications Wire frame

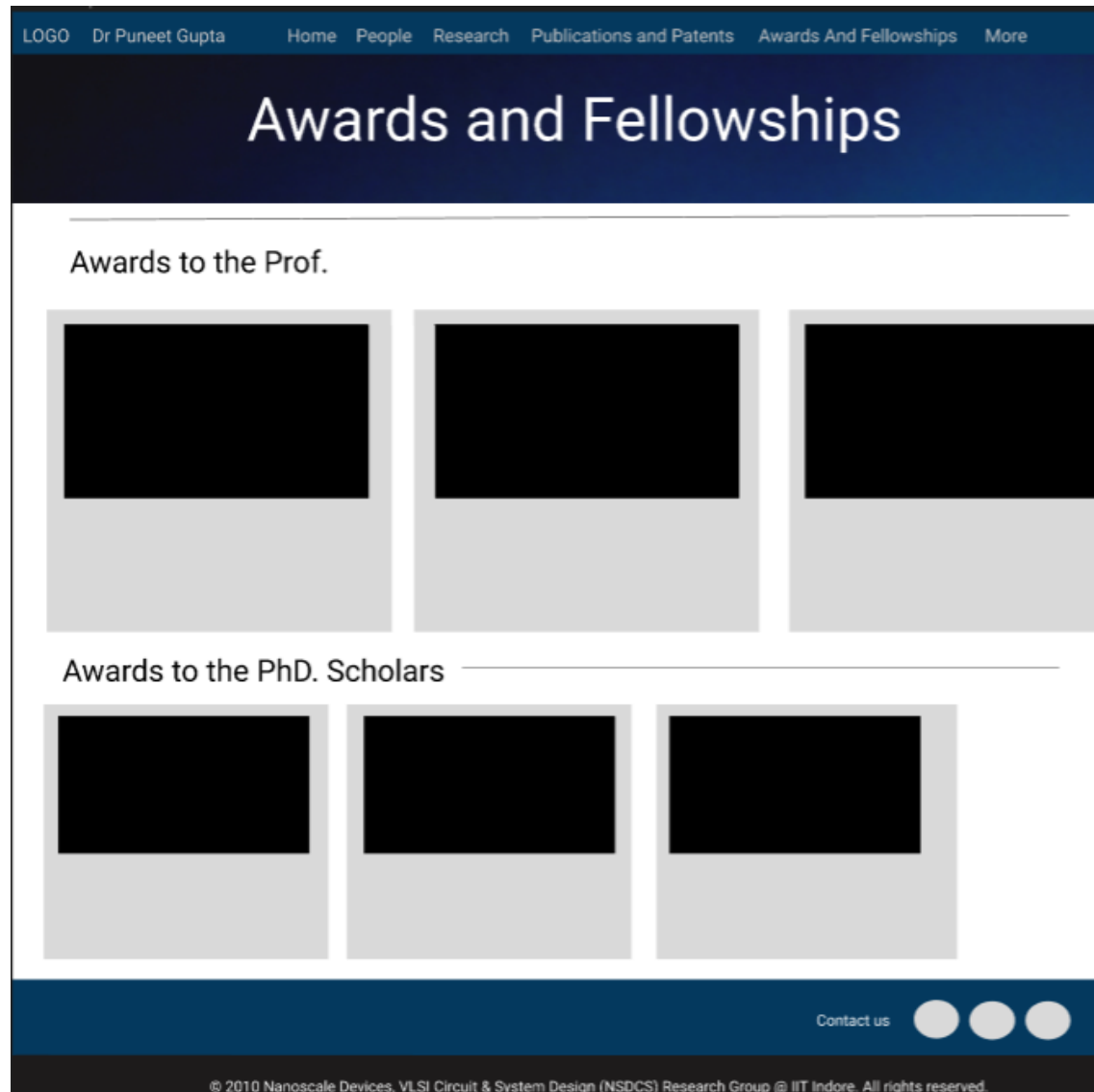


Figure 3.5: Awards Wire frame

4. History section: The history section will provide a timeline of the lab/group's history, including important milestones and achievements.
5. Team section: The team section will provide information about the lab/group's current members, their roles, and their areas of expertise.
6. Collaborators section: The collaborators section will provide information about the lab/group's external partners and collaborators.
7. Footer: The footer will include copyright information, social media links, and quick links to important pages.

3.7 Resources Page

The resources page will provide links to relevant external resources, such as funding opportunities, data repositories, and tools. The following elements will be included:

1. Header: The header will include the lab/group's logo and a navigation bar.
2. Hero section: The hero section will include a banner image or video and a headline.
3. Funding opportunities section: The funding opportunities section will provide links to funding agencies and programs that support the lab/group's research.
4. Data repositories section: The data repositories section will provide links to data repositories that store the lab/group's research data and outputs.
5. Tools section: The tools section will provide links to software and tools that the lab/group uses for its research.
6. Footer: The footer will include copyright information, social media links, and quick links to important pages.

4 Non-Functional Requirements

The non-functional requirements of the lab/group website are as follows:

4.1 Performance

The website should be able to handle a large number of visitors and requests, and respond quickly to user interactions. The website should have a fast loading speed and be optimized for search engine ranking.

4.2 Security

The website should be secure and protect sensitive information, such as user data and research data, from unauthorized access or breaches. The website should use secure protocols, such as HTTPS and SSL, and implement security measures, such as firewalls and access controls.

4.3 Reliability

The website should be available and accessible at all times, with minimal downtime or errors. The website should have backup and recovery mechanisms in case of data loss or system failures.

4.4 Scalability

The website should be able to accommodate future growth and changes, such as adding new members, projects, or features. The website should be modular and flexible, with easy customization and integration.

5 Technical Requirements

The technical requirements of the lab/group website are as follows:

5.1 Architecture

The website will be built using a modern web development stack, such as the LAMP (Linux, Apache, MySQL, PHP) or MEAN (MongoDB, Express.js, AngularJS, Node.js) stack. The website will be designed with a responsive layout, optimized for desktop and mobile devices, and follow web development best practices, such as semantic HTML, CSS, and JavaScript.

5.2 Hosting and Deployment

The website will be hosted on a reliable and secure web hosting service, such as Amazon Web Services (AWS) or Google Cloud Platform (GCP). The website will be deployed using a continuous integration and deployment (CI/CD) pipeline, with automated testing and deployment processes.

5.3 Database

The website will use a database management system, such as MySQL or MongoDB, to store and manage data, such as member profiles, project details, and events information. The database will be optimized for performance and scalability, with appropriate indexing and caching mechanisms.

5.4 Security

The website will implement security measures to protect user data and research data, such as authentication and authorization mechanisms, SSL/TLS encryption, and firewall protection. The website will use secure coding practices, such as input validation and error handling, to prevent common web vulnerabilities, such as cross-site scripting (XSS) and SQL injection.

5.5 Content Management System

The website will use a content management system (CMS), such as WordPress or Drupal, to manage and update content, such as news, publications, and events. The CMS will

provide a user-friendly interface for non-technical users to manage content, and allow for customization and extension through plugins and modules.

6 Conclusion

This Software Requirements Specification (SRS) document outlines the functional, non-functional, and technical requirements of the lab/group website. The website will serve as a platform for showcasing the lab/group's research activities, projects, and members, as well as providing resources and information for visitors and collaborators. The website will be built with modern web development technologies and follow best practices for security, reliability, and scalability.

7 Assumptions and Constraints

The following assumptions and constraints have been identified for the development of the lab/group website:

1. The development team has access to the necessary hardware, software, and infrastructure required for web development and hosting.
2. The website will be developed using open source tools and technologies, to reduce costs and increase flexibility.
3. The website will be developed within a reasonable timeframe, and with a budget that is agreed upon by the lab/group and the development team.
4. The website will be maintained and updated regularly, to ensure that it remains secure, up-to-date, and functional.

8 Future Work

The following features and enhancements could be added to the lab/group website in future iterations:

1. Integration with social media platforms, to increase visibility and engagement with the lab/group's research activities.
2. Implementation of a data management system, to facilitate the storage, sharing, and analysis of research data.
3. Implementation of machine learning or artificial intelligence algorithms to improve the website's functionality and user experience.

9 Glossary

The following terms are used throughout this Software Requirements Specification document and are defined as follows:

1. LAMP: A web development stack consisting of Linux, Apache, MySQL, and PHP.
2. MEAN: A web development stack consisting of MongoDB, Express.js, AngularJS, and Node.js.
3. CMS: Content Management System, a software application used to manage and publish digital content.
4. CI/CD: Continuous Integration/Continuous Deployment, a software engineering practice that involves frequent automated testing and deployment of code changes.
5. SSL/TLS: Secure Sockets Layer/Transport Layer Security, cryptographic protocols used to secure internet communication.
6. XSS: Cross-site scripting, a type of web security vulnerability.
7. SQL injection: A type of web security vulnerability where an attacker inserts malicious SQL code into a web form input field to gain unauthorized access to a database.

10 References

The following references have been used in the development of this Software Requirements Specification document:

1. IEEE Std 830-1998: IEEE Recommended Practice for Software Requirements Specifications.
2. ISO/IEC/IEEE 29148:2011: Systems and software engineering – Life cycle processes – Requirements engineering.
3. W3C Web Content Accessibility Guidelines (WCAG) 2.1: <https://www.w3.org/TR/WCAG21/>
4. OWASP Top Ten Project: <https://owasp.org/www-project-top-ten/>
5. The Open Web Application Security Project (OWASP): <https://owasp.org/>