



**POLITECNICO**  
MILANO 1863

SCUOLA DI INGEGNERIA INDUSTRIALE  
E DELL'INFORMAZIONE

# Design Document

STUDENTS & COMPANIES

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# Deliverable Information

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# 1 | Introduction

## A. Purpose

The purpose of this document is to provide a detailed description of Student&Companies. It will help developers to implement the required system features and it should provide the customer with a clear description of the system, allowing him to verify that it meets the specified requirements.

## B. Scope

Student&Companies is a platform that connects students, companies, and universities to facilitate the internship research, announcement and selection process. The platform provides services such as internship announcements, profile management, a recommendation system, interview management, and performance feedback. The platform is designed to be user-friendly and easy to use for students, companies, and universities. It is a web-based application that can be accessed from any device with an internet connection.

## C. Definition,acronyms,abbreviations

### C.1. Definitions

- **Student:** A person who is looking for internships.
- **Company:** An organization which wants to announce internship opportunities to students.
- **University:** An educational institution that is related to students and their internships.
- **User:** A generic term for students, companies, and universities who use the platform.
- **Candidate:** A term for students whose applications are selected and that will take

part in the interview process.

- **Internship:** A opportunity offered by companies to students to gain practical experience in a real job environment.
- **CV:** Curriculum Vitae, a document that contains all necessary information about students to be able to apply for internships.
- **Recommendation:** A suggestion made by the platform to students and companies based on statistical analyses and keyword searches.
- **Interview:** A questionnaire form, that can be followed by an external meeting between students and companies, to evaluate the student preparation and make him understand what the company is looking for.
- **Feedback:** Helpful information written by students and companies about their internship experiences to improve a performance of the two parties.
- **Notification:** A message sent by the platform to inform students and companies about important events, such as new internship offers, matching CVs, interview results etc.
- **Interview:** A meeting between students and companies to decide an assignment of the internship offer.
- **Platform:** The Students&Companies (S&C) system that provides the services to students, companies, and universities about internships.
- **Keyword:** A significant word or tag used to describe content, such as the skills, experiences, and preferences of students and companies.
- **Comment:** The text that is written by students and companies to provide feedback or complaints about their internship experiences.
- **Complain:** A text that expresses dissatisfaction, issues, or annoyance about the internship experiences. It will be treated as a synonym of feedback in this document.

## C.2. Acronyms

- **S&C:** Students&Companies
- **CV:** Curriculum Vitae
- **UI:** User Interface
- **UX:** User Experience

- **API:** Application Programming Interface
- **HTTPS:** Hypertext Transfer Protocol Secure
- **TLS:** Transport Layer Security
- **REST:** Representational State Transfer

### C.3. Abbreviations

- **CO:** Company
- **ST:** Student
- **UNI:** University

## D. Revision History

## E. Reference Documents

- Assignment RDD AY 2024–2025.

## F. Document Structure

This document is structured as follows:

- **Section 1: Introduction**
- **Section 2: Architectural Design**
- **Section 3: User Interface Design**
- **Section 4: Requirements Traceability**
- **Section 5: Implementation, Integration, and Test Plan**
- **Section 6: Effort Spent**

The time spent by each group member on each task will be registered in this section.

It will be used to present the effort dedicated by each member and to present the progress of the development of the project.

- **Section 7: References**

The other references that not include in the reference documents will be added in this section.

# 2 | Architectural Design

## A. Overview

S&C will be developed as a multi-tiered, client-server architecture, as shown in Figure 2.1. The system will be divided into three main layers: the presentation layer, the application layer, and the data layer. The presentation layer will be responsible for managing the user interface and the user interaction. The application layer will be responsible for managing the application logic. The data layer will be responsible for managing the data storage and the data access.

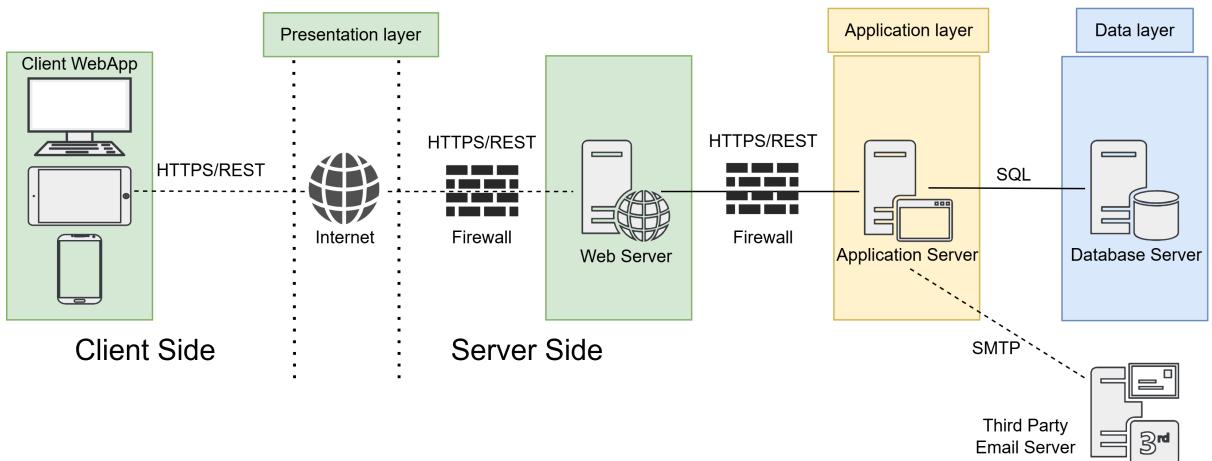


Figure 2.1: S&C architectural overview

In the following paragraph we describe each tier presented in Figure 2.1: and what layer it deploys:

### Client Side

- **Web App:** It is the user interface. It will be responsible for managing the user interaction. This means that it will be responsible for hosting part of the presentation layer.

## Server Side

- **Firewall:** It will be responsible for managing the security of the system, by filtering the incoming and outgoing traffic and restricting the access based on predefined rules. It will be placed between the Web Server and the Internet and between the Application Server and the Web Server. In this way, the web server will reside in a DMZ (Demilitarized Zone), while the application server will resides in a protected internal network.
- **Web Server:** It serves as a gateway between the client and the application server (backend). It will be responsible for hosting part of the presentation layer. For example, it will be responsible for serving the web pages to the client, handling requests routing to the application server, managing load balancing, and handling security.
- **Application Server:** It will be responsible for managing the application logic. This means that it will host the application layer. For example, it will be responsible for processing the client requests, execute the business logic, and coordinates with the database and email server.
- **Database Server:** It will be responsible for managing the data storage and the data access. This means that it will host the data layer. For example, it will be responsible for storing and retrieving the application data, and executing the database queries.
- **Mail Server:** It will be responsible for managing the email communication. This means that it will be responsible for sending emails to the users. It is triggered by the application server.

The Figure 2.1 also shows how the tiers interact with each other. The Web App interacts with the Web Server through HTTPS/REST requests; the Web Server interacts with the Application Server through HTTPS/REST calls; the Application Server interacts with the Database Server through SQL queries; and the Application Server interacts with the Mail Server through SMTP requests.

## B. Components view

### B.1. High-level components and interactions

### B.2. Low-level components and interactions

C. Deployment view

D. Component interfaces

E. Runtime view

F. Selected architectural styles and patterns

G. Other design decisions



# 3 | User Interface Design

## A. User Interface Design

In this section, the user interface design will be presented using mockups within the short description. The design focuses on optimizing the user experience and ensuring that the user can easily navigate on the website to perform the desired actions. There will be separate subsections to describe more clearly the main pages needed to satisfy the user requirements.

### A.1. Welcome Page

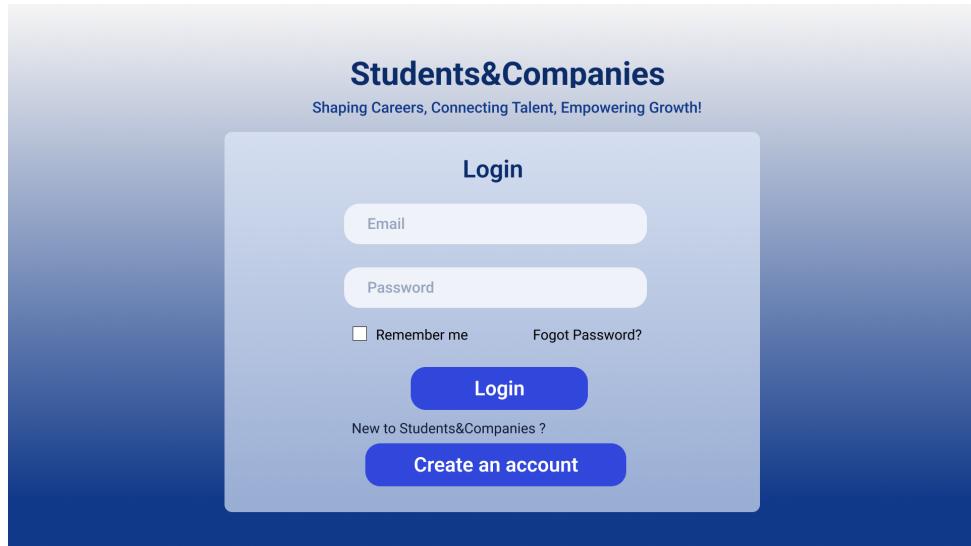


Figure 3.1: Welcome Page

### A.2. Register Page

If the User is not registered and wants to create an account, they will be asked to choose the type of account they want to create. Clicking on the type listed will redirect to the corresponding Register Page where the user can fill in the required information.

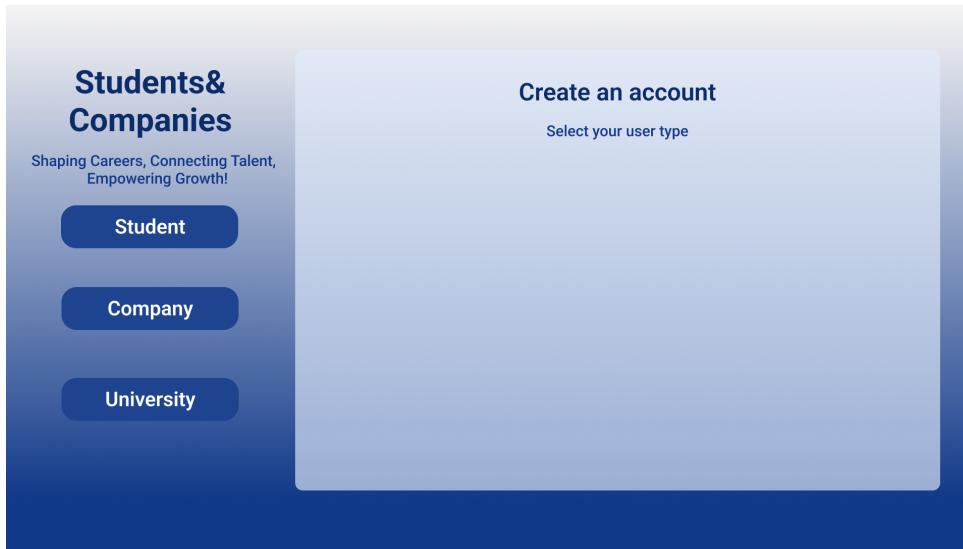


Figure 3.2: Register Page

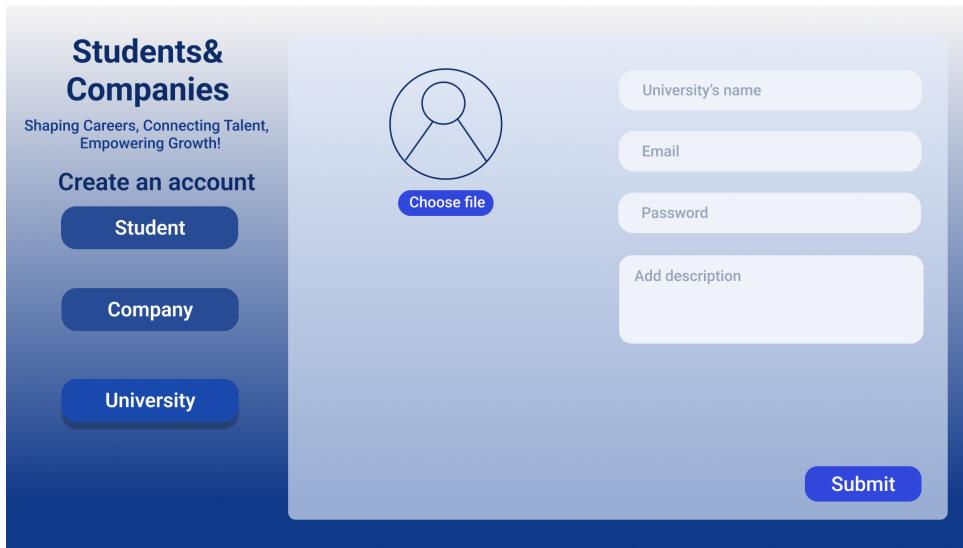


Figure 3.3: University create account

The screenshot shows the 'Create an account' section for students. It features a sidebar with 'Students& Companies' logo and 'Shaping Careers, Connecting Talent, Empowering Growth!' tagline. Below this are three buttons: 'Student', 'Company', and 'University'. The main form area has a placeholder profile picture with a 'Choose file' button. It includes fields for Name, Surname, Email, Password, and a dropdown for 'Select your university'. There are also sections for 'Add fields you're interested in:' (Robotics, Space, Software) and 'Add your skills:' (C++). A 'Upload your CV' field with a 'Choose file' button is also present. A large blue 'Submit' button is at the bottom right.

Figure 3.4: Student create account

The screenshot shows the 'Create an account' section for companies. It has the same sidebar as Figure 3.4. The main form area has a placeholder profile picture with a 'Choose file' button. It includes fields for Legal Name, EIN, Department, Email, Password, and a text area for 'Add description'. There is also a section for 'Add fields the company focus on:' (AI, Software). A large blue 'Submit' button is at the bottom right.

Figure 3.5: Company create account

### A.3. Student's view

Once access to the platform, to optimizing the user experience, the student will be able to use the side menu to navigate the main functionalities provided by the platform to satisfy their needs.

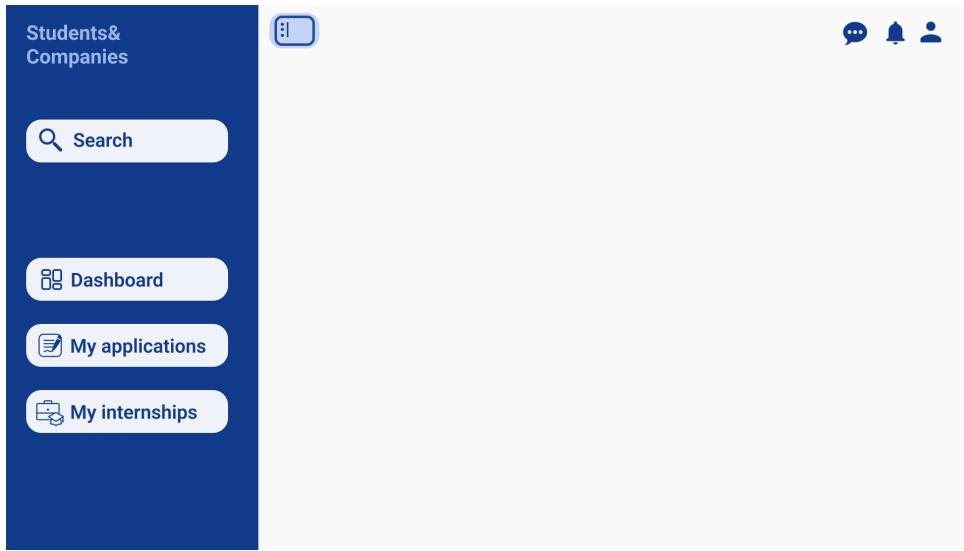


Figure 3.6: Student's Side Menu

By default, the student will be directed to the Dashboard page once logged in.

Application Details	Status
ChatGPT - NLP Engineer   20th Dec. 2024	WAITING
ChatGPT - NLP Engineer   20th Dec. 2024	WAITING
ChatGPT - NLP Engineer   20th Dec. 2024	WAITING
ChatGPT - NLP Engineer   20th Dec. 2024	WAITING

Figure 3.7: Student's Dashboard 1

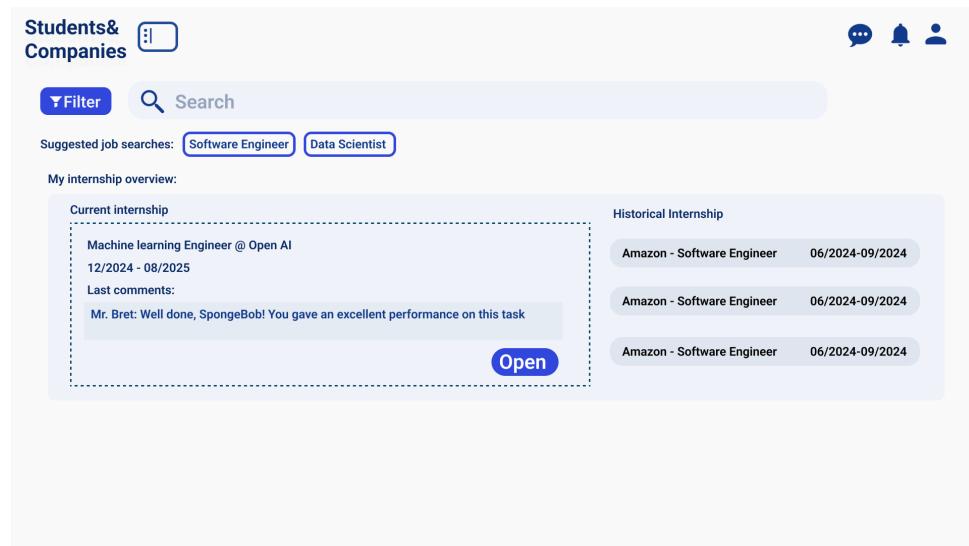


Figure 3.8: Student's Dashboard 2

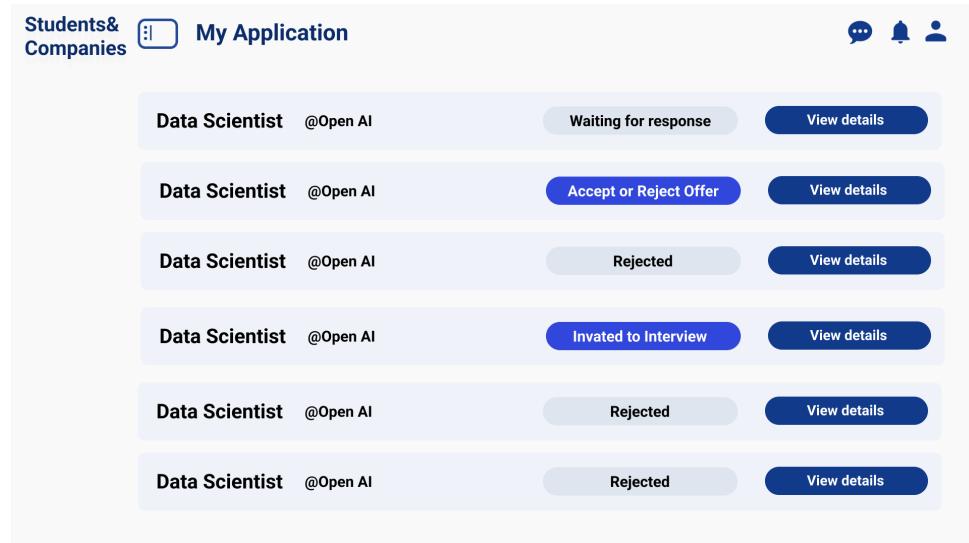


Figure 3.9: My application

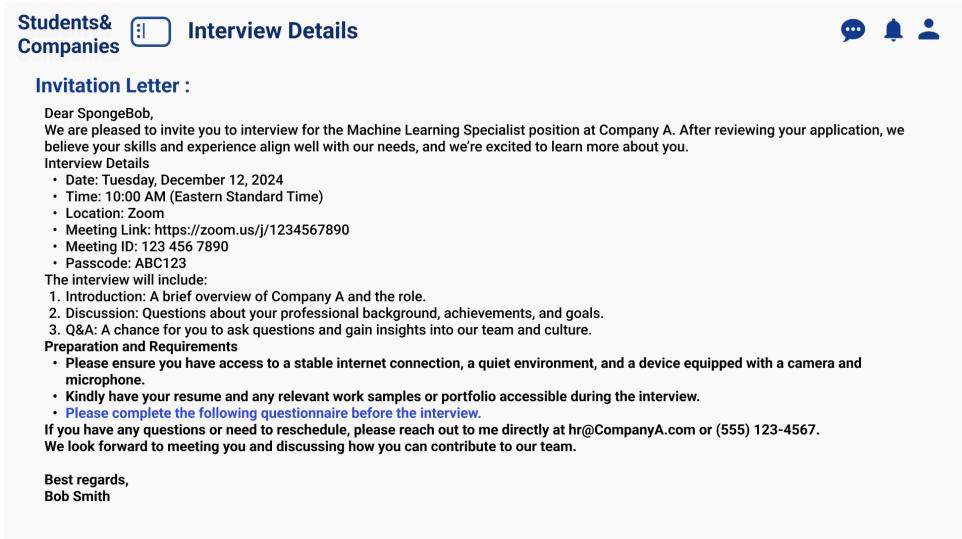


Figure 3.10: Interview details 1

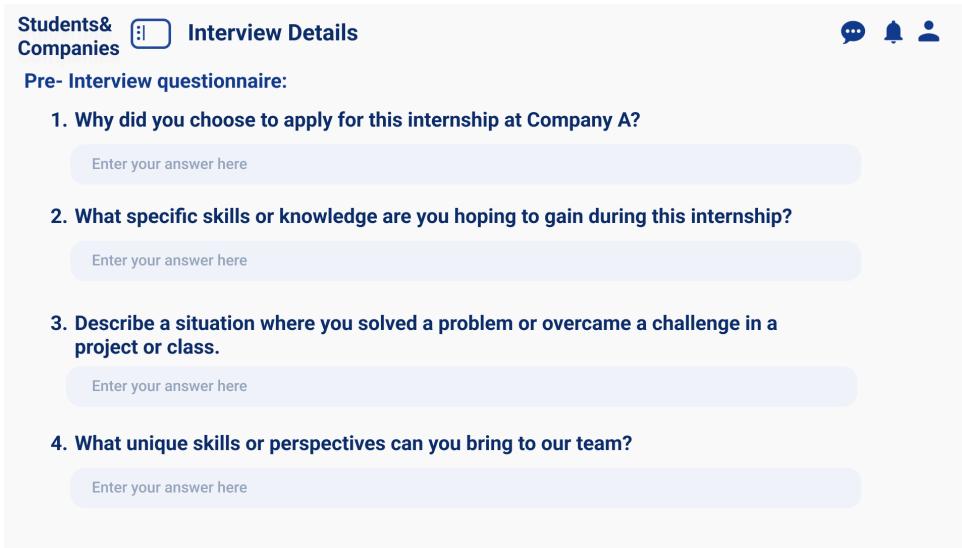


Figure 3.11: Interview details 2

**Students& Companies** Interview Details

**Pre- Interview questionnaire:**

**5. What do you consider your greatest strength as it relates to this internship?**

Enter your answer here

**6. How do you handle feedback or constructive criticism?**

Enter your answer here

**7. Are there any particular areas or tasks in this internship that you are especially excited about?**

Enter your answer here

**Submit**

Figure 3.12: Interview details 3

**Students& Companies** Offer

**Offer Letter :**

Dear SpongeBob,  
We are pleased to offer you the position of Machine Learning Specialist Intern at Company A. After reviewing your application and interview, we're confident that your skills and enthusiasm make you a great fit for our team. Congratulations!

**Internship Details**

- Start Date: January 15, 2025
- End Date: April 15, 2025
- Schedule: Monday to Friday, 9:00 AM - 3:00 PM
- Location: Company A headquarters, 123 Innovation Drive, Tech City
- Supervisor: Patrick Star, Senior Data Scientist

During the internship, you'll assist with developing machine learning models, analyzing datasets, and deploying solutions to real-world problems.

**Compensation & Benefits**

- Stipend: \$1,500/month
- Benefits: Workshops, mentorship, and networking opportunities

**Next Steps**

Please [accept or reject the offer by clicking the button below](#) by December 12, 2024. For any questions, feel free to contact me at [hr@companya.com](mailto:hr@companya.com) or (555) 987-6543.

We look forward to having you on board!

Best regards,  
Patrick Star

**Accept Offer**    **Reject Offer**

Figure 3.13: Accept or Reject Offer

**Current Internship:**

**Company: OpenAI**  
**Data Scientist**

Description overview: ....

Add Comments

**Historical Internships:**

**Data Scientist**  
25th Dec. 2023 - 15th July 2024  
Company - Amazon

Description overview:....

**Data Scientist**  
25th Dec. 2023 - 15th July 2024  
Company - Amazon

Description overview:....

View details

View details

Figure 3.14: My internship

**A Company A**

**Data Scientist Intern** open

1 day ago

Milan, Lombardy, Italy

Application deadline: 15th Dec. 2024

Position available: 2

On-site, full time

Apply

Description of the job:

- Qualifications: Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua.
- Benefits: Ut enim ad minim veniam, quis nostrum exercitationem ullamco laboriosam, nisi ut aliquid ex ea commodo consequat.
- Overview: Duis aute irure reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint obcaecat cupiditat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

Figure 3.15: Internship announcement details

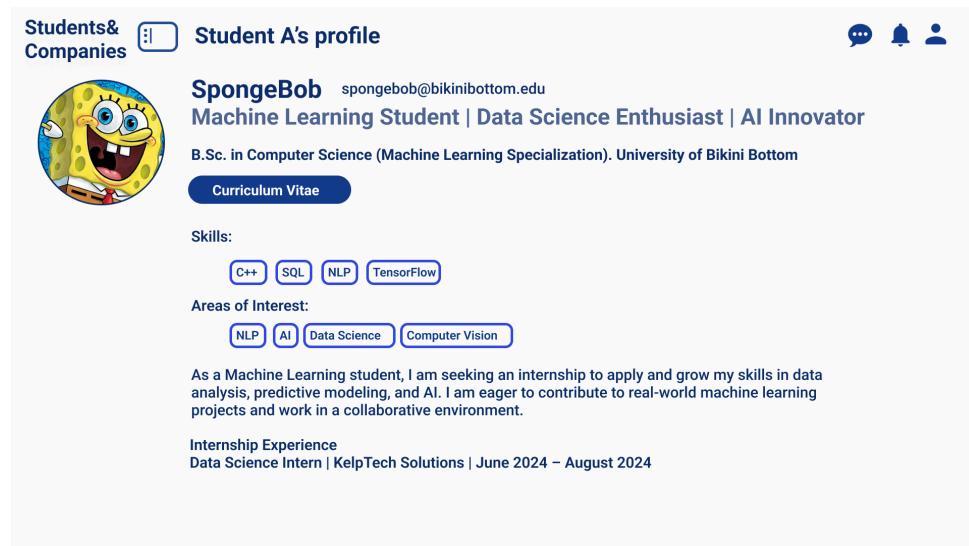


Figure 3.16: Student's profile from other's view

#### A.4. Company's view

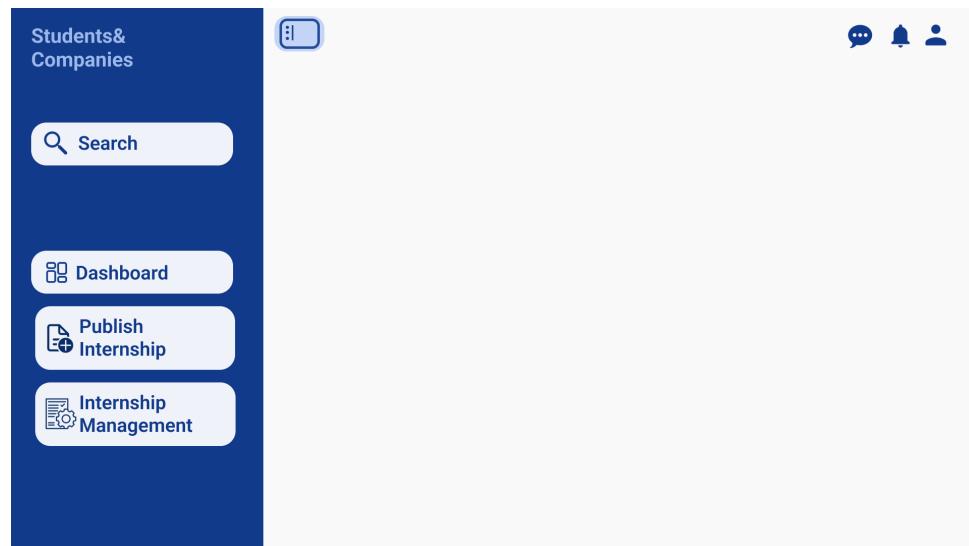


Figure 3.17: Company's Side Menu

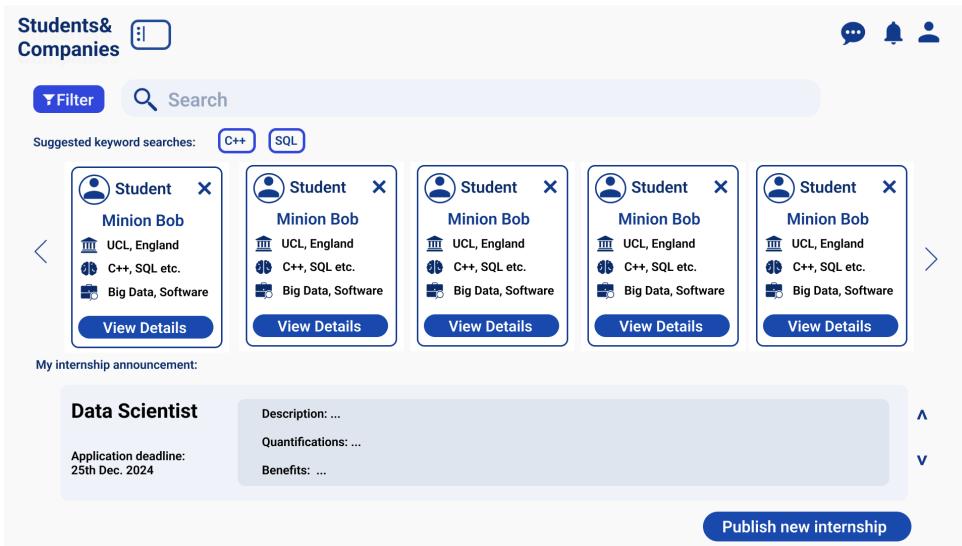


Figure 3.18: Company's Dashboard 1



Figure 3.19: Company's Dashboard 2

The screenshot shows a form titled "Publish Internship" for posting internship opportunities. The form fields include:

- Role type:** role of Internship
- Employment type:** part-time, full time etc.
- Location:** location
- Work site:** on-site, online etc.
- Number accept:** number accept
- Application deadline:** gg/mm/year
- Qualifications:** requirements etc.
- Benefits:** lunch, opportunity etc.
- Overview description:** others

A large blue "Publish" button is located at the bottom right of the form area.

Figure 3.20: Publish Internship

The screenshot shows the "Internship Management" section with the following sections:

- In publishing:** Two entries for "Data Scientist" are listed:
  - Application deadline: 25th Dec. 2024  
n. accept: 2
  - View details button
  - current n.application: 5
- In selection:** One entry for "Data Scientist" is shown:
  - Description overview: ....
  - Select Candidates button
- In progress:** One entry for "Student: SpongeBob" and "Data Scientist" is shown:
  - Description overview: ....
  - Add Comments button

Figure 3.21: Internship Management 1

The screenshot shows a user interface for managing internships. At the top left, there's a logo for "Students& Companies" with a blue square icon containing three dots. To the right of the logo is the text "Internship Management". On the far right, there are three small icons: a speech bubble, a bell, and a person. Below the header, the word "Completed:" is displayed. Three identical internship entries are listed, each consisting of a title ("Data Scientist"), a date range ("25th Dec. 2023 - 15th July 2024"), a student name ("Student Super Mario"), a "Description overview..." link, and a "View details" button.

Figure 3.22: Internship Management 2

The screenshot shows a detailed view of an internship listing. At the top left, it says "Students& Companies" with a blue square icon containing three dots, followed by "Internship Details". On the far right, there are three small icons: a speech bubble, a bell, and a person. The listing is for "Company A". It features a title "Data Scientist Intern" with an "open" status, a timestamp "1 day ago", and a location "Milan, Lombardy, Italy". It also shows an application deadline "15th Dec. 2024", position availability "2", and work type "On-site, full time". Below this, under "Description of the job:", there is a bulleted list of qualifications, benefits, and an overview, all in placeholder text.

Figure 3.23: Internship details in publishing phase



Figure 3.24: Select candidates

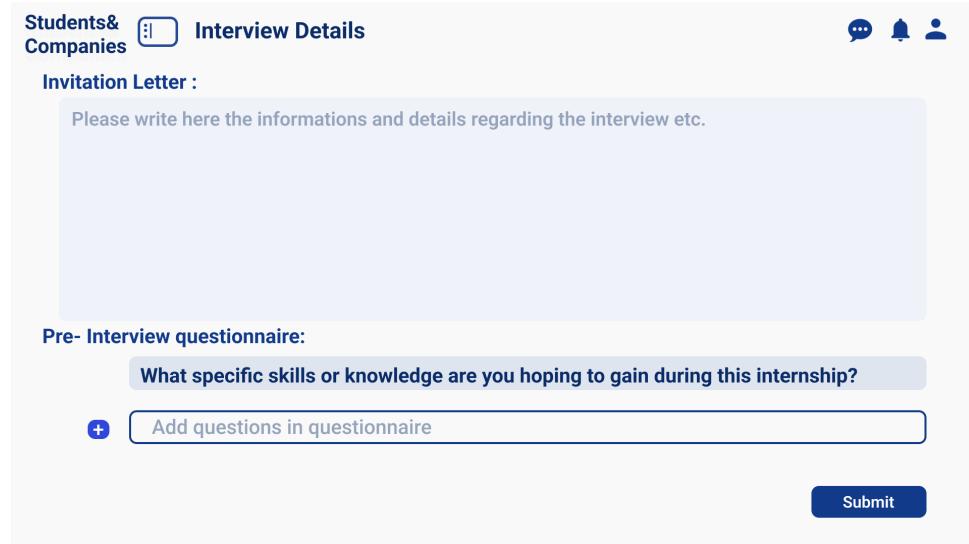


Figure 3.25: Set up interview

## A.5. University's view

**Students& Companies** **Comments(Feedback&Complaint)**

**Data Scientist Intern** **Description of the job:**

1 day ago  
 Milan, Lombardy, Italy  
 Application deadline: 15th Dec. 2024  
Position available: 2  
On-site, full time

- Qualifications: Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua.
- Benefits: Ut enim ad minim veniam, quis nostrum exercitationem ullamco laboriosam, nisi ut aliquid ex ea commodo consequat.
- Overview: Duis aute irure reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint obcaecat cupiditat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

Feedback&Complaint section:

Write here...

**Submit**

Figure 3.26: Feedback and Complaint

**Students& Companies** **KELPTECH SOLUTIONS's profile**

**KELPTECH SOLUTIONS** [info@kelptechsolutions.com](mailto:info@kelptechsolutions.com)  
**Technology**

123 Innovation Drive, Suite 789, Bikini Bottom City, Ocean Floor

KelpTech Solutions is an innovative technology company located in Bikini Bottom City, specializing in Artificial Intelligence, Machine Learning, and Computer Vision. We are at the forefront of developing cutting-edge solutions that blend the latest advancements in AI with consumer behavior analysis. Our flagship project aims to revolutionize the food industry by creating a Hamburger Preference Detector that uses visual knowledge to predict and personalize hamburger preferences for consumers.

Through the use of machine learning models and image recognition technology, KelpTech's system can analyze visual data of hamburgers and understand the ingredients, presentation, and even customer reactions to recommend the ideal burger for any individual. We aim to transform how consumers interact with food, making dining experiences more personalized and enjoyable.

Specialization:

Announcements Published

Machine Learning Intern @KelpTech Solutions

Figure 3.27: Company's profile from other's view

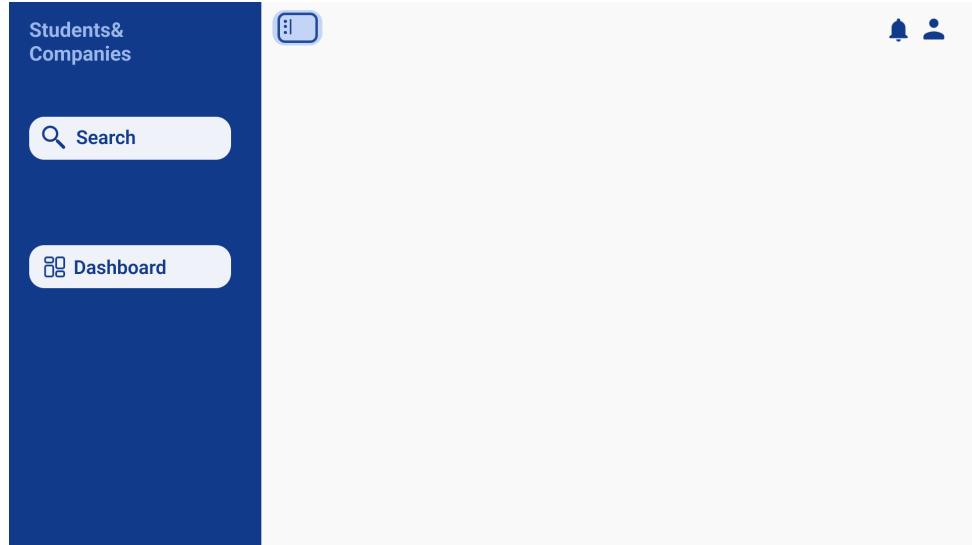


Figure 3.28: University's Side Menu

A screenshot of a university dashboard. At the top left is the text "Students&amp; Companies" and a filter icon. To the right are two small icons: a bell and a person. Below this is a search bar with a magnifying glass icon and the word "Search". On the left, there is a "Student list" section showing two entries for "SpongeBob". Each entry includes a profile picture, the name "SpongeBob", a list of skills ("C++, SQL, ML, historical internship, Machine learning Engineer"), and a "Profile details" button. On the right, there is a section titled "SpongeBob's activities" showing three entries for "Data Scientist". Each entry includes the title "Data Scientist", the dates "25th Dec. 2023 - 15th July 2024", the company "Company - Amazon", and a "View details" button.

Figure 3.29: University's Dashboard 1

The screenshot shows a user interface for posting feedback and complaints. At the top, there are navigation links for 'Students& Companies' and 'Comments(Feedback&Complaint)'. On the right, there are icons for messaging, notifications, and user profile. Below this, a job listing for a 'Data Scientist Intern' is displayed. The listing includes a timestamp ('1 day ago'), location ('Milan, Lombardy, Italy'), application deadline ('15th Dec. 2024'), and position details ('Position available: 2 On-site, full time'). To the right of the listing is a 'Description of the job:' section with three bullet points: 'Qualifications', 'Benefits', and 'Overview', each containing placeholder text. Below the job listing are two large, empty input fields labeled 'Feedback&Complaint:' and 'Final evaluation:', both with a light gray background.

Figure 3.30: Feedback and Complaint

# 4 | Requirements Traceability



# 5 | Implementation, Integration and Test Plan



# 6 | Effort Spent



# 7 | References