



**UNSW**  
SYDNEY

## **COMP 3900 Computer Science Project**

### **P21 Student industry project management system**

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**Submission Date: 09 / 9 / 20223**

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# Background

In the globalized and context of rapidly changing economy, higher education institutions play an essential role in the training of practices and innovators. However, the traditional academic model of education often provides students with insufficient practical experience. Neither provides students with relevant industry opportunities for their future careers. At the same time, businesses and industry partners are looking for ways to innovate and solve complex problems. Companies are eager to leverage academic resources and the energy of young people to achieve these goals. To bridge the gap between academic and industry divide, we have created an innovative programme designed to bring students, academic tutors and industry partners together. More than just a simple platform, the software is a comprehensive solution for tripartite coordination.

The programme provides a unique opportunity for students to get involved in real industry projects and gain valuable practical experience. It not only helps them become more employable after graduation, but also accelerates their career development.

Tutors can use the software to better mentor their students and integrate learning with real projects. It is a way to boost students' academic and professional skills.

Industry partners can easily connect with educational institutions through the platform and collaborate with potential students to solve real industry problems. It helps companies achieve innovation while also supporting the research and education mission of academia.

Our programme provides an effective way for coordinating activities between students, tutors, and industry partners. It includes features such as industry posting of projects, analysis of student profiles, and academic supervisors monitoring and providing feedback. These features ensure that industry projects run successfully. Through the software, a closely connected academic and industry ecosystem is created. As well as providing more opportunities for students and bringing more innovation to the organization, while also promoting the practical aspects of academics.

## Analysis of Existing Systems

We searched and analysed existing similar platforms GradConnection and Seek. GradConnection is an Australian-originated global recruitment platform focused on connecting students with employers across a range of industries. Seek is a renowned online recruitment and career development company that focuses on services related to career development, recruitment, and job search.

Focusing on campus recruitment, these platforms are dedicated to helping university students and graduates find internships, graduate schemes, and full-time positions. It allows graduates to enter the workplace in their field of study more easily. But they also have drawbacks and shortcomings in some areas. Primarily they focus on career development and employment rather than collaboration among academia, industry, and project management. The platforms do not provide functions for educational support and guidance between tutors and students. Therefore, it may not be suitable for academic research projects, especially those involving laboratory research, data analysis and

scientific collaboration. Subsequently, GradConnection and Seek are not sufficient to fulfil the functions and needs of assigning tasks, progress tracking and resource sharing. These features are essential to assist students, tutors, and industry to collaborate on academic or practical problems, which are not well supported in GradConnection and Seek platforms.

Existing platforms focus on the connection between students and industry, ignoring the importance of mentorship. By acting as a bridge between students and industry partners, tutors play a critical role in the success of the programme and the development of the students. They can provide students with expertise and experience, guide them apply learning in real industry projects. And helping students develop practical skills and professionalism. Tutors can ensure that projects are moving forward as planned, tasks are assigned, progress is tracked, and resources are allocated appropriately. In our software, tutors can provide feedback and evaluate students to help them understand how they are performing on the project, point out opportunities for improvement, and encourage them to continue to learn.

In general, while GradConnection and Seek provide some information related to career development and recruitment, they are less appropriate for supporting collaboration and project management between tutors and students. It is a major difference from our software. The focus of our work is to foster close collaboration between the three parties - students, tutors, and industry, to promote interaction and collaborative working between academia and industry.

## User stories

### **Project objective:**

Students, academic supervisors, industry partners to register, logout and login using username and password credentials.

### **Related user stories:**

- As a student, I want a strong password, so that my private information is secure
- As an academic supervisor, I want a strong password, so that my private information is secure
- As an industry partners, I want a strong password, so that my private information is secure
- As a student, I want to register, so that I can login
- As an academic supervisor, I want to register, so that I can login
- As an industry partner, I want to register, so that I can login
- As a student, I want to login, so that I can find projects
- As an academic supervisor, I want to login, so that I can find projects
- As an industry partner, I want to login, so that I can post project
- As a student, I want to logout, so that I can change account
- As an academic supervisor, I want to logout, so that I can change account
- As an industry partner, I want to logout, so that I can change account

### **Project objective:**

Students, academic supervisor, industry partners have their own personal homepage

**Related user stories:**

As a student, I want to publish my resume on my own homepage, so that I can help academic supervisors and industry partners to learn more about me.

As a student, I want to make my personal information more detailed, so that I can get recommendation of suitable project more precise

As an academic supervisor, I want to publish my resume on my own homepage, so that I can help students and industry partners to learn more about me.

**Project objective:**

Students to browse through the posted industry problems and express their interest in specific projects.

**Related user stories:**

As a student, I want to browse through a projects list, so that I can look for all projects clearly

As a student, I want to check the detailed information about a specific project, so that I can determine whether I'm good at it or interested in it.

**Project objective:**

The recommendation of suitable projects to students

**Related user stories:**

As a student, I want the system to automatically recommend the suitable project for me, so that I can find projects more efficient.

**Project objective:**

Students to submit their resumes and portfolios to demonstrate their suitability for the projects they are interested in.

**Related user stories:**

As a student, I want to submit my resume to projects, so that I can apply for projects.

As a student, I want to have a list of all applied projects, so that I can check, revise and cancel all these projects.

**Project objective:**

Academic supervisors to view the projects and select the ones they are best equipped to supervise

**Related user stories:**

As an academic supervisor, I want to browse through a projects list, so that I can look for all projects clearly.

As an academic supervisor, I want to check the detailed information about a specific project, so that I can determine whether I'm good at it or interested in it.

As an academic supervisor, I want to have a list of all applied projects, so that I can check, revise and cancel all these projects.

**Project objective:**

Industry partners to post real-world problems and project opportunities directly on the system.

Each problem should include details such as the problem statement, desired outcomes, required skills, and potential deliverables

**Related user stories:**

As an industry partner, I want to make project information more detailed, so that students and academic supervisor can learn more about it.

As an industry partner, I want to post the project, so that I can find the academic supervisor and students.

**Project objective:**

Paring students and industry partners based on the analysis of students' profiles, skills, and the project's preferences.

**Related user stories:**

As an industry partner, I want to have students recommendation system, so that I can find students who suits the project more efficient.

As an industry partner, I want to have a list of all apply students, so that I can check their information more clearly and make choice.

**Project objective:**

The recommendation of suitable academic supervisors to students and industry partners.

**Related user stories:**

As an industry partners, I want to choose an academic supervisor, so that my project can be supervised.

As an industry partners, I want to have a list of all apply academic supervisors, so that I can check their information more clearly and make choice.

As a student, I want to have a list of all apply academic supervisors, so that I can check their information more clearly and make choice.

As an industry partners, I want to have a list of recommendation of academic supervisors, so that I can check their information more clearly and make choice.

As a student, I want to have a list of recommendation of academic supervisors, so that I can check their information more clearly and make choice.

**Project objective:**

After both students and academic supervisors have been selected, they will be able to access the main page of the project just like the industry partners.

**Related user stories:**

As a student, I want to check the updated information of the project and project objective in next sprint, so that I can make a new plan or change schedules.

As a student, I want to enter the project main page, so that I can report the project progress and update the information.

As an academic supervisor, I want to enter the project main page to check the progress of the project and supervising students' performance.

As an academic supervisor, I want to provide feedback, so that the alignment between projects and students' learning goals can be improved.

As an industry partner, I want to enter the project main page to check the progress of the

project and update information.

As an industry partner, I want to check the performance of students and academic supervisor, so that I can rate my experience working with them.

## Sprint Structure

Sprint	1	2	3
Period	28/09/2023 – 11/10/2023	15/10/2023 – 01/11/2023	05/11/2023 – 15/11/2023
Objective	The goal is to complete the database construction, create a website prototype, implement registration and login functionalities for students, academic supervisors, and industry partners, and develop front-end registration and login pages. The aim is to achieve interaction between the front-end and back-end.	The goal is to achieve approximately 70% of the functionality. Each user type (students, academic supervisors, industry partners) should have their own individual profile page and the ability to apply for/post projects based on their specific needs.	The goal is to complete all remaining front-end and back-end tasks, make necessary modifications, additions, or deletions to various features, refine the details, and prepare for a demo presentation. Complete the final report.
Deliverable	Demo A and retrospective A	Demo B and retrospective B	Final demo and final report

### Sprint 1

▼ Sprint 1 28 9月 – 13 10月 (12 个事务)			0 0 0 完成冲刺	...
Complete Sprint 1, create a website prototype, implement all registration and login functionalities, and integrate the front-end and back-end.				
<input checked="" type="checkbox"/> IKUN3900-1 As a student, I want a strong password, so that my private information is secure.	待办 ▼	-	👤	
<input checked="" type="checkbox"/> IKUN3900-2 As an academic supervisor, I want a strong password, so that my private information is secure.	待办 ▼	-	👤	
<input checked="" type="checkbox"/> IKUN3900-3 As an industry partners, I want a strong password, so that my private information is secure.	待办 ▼	-	👤	
<input checked="" type="checkbox"/> IKUN3900-4 As a student, I want to register, so that I can login.	待办 ▼	-	👤	
<input checked="" type="checkbox"/> IKUN3900-5 As an academic supervisor, I want to register, so that I can login.	待办 ▼	-	👤	
<input checked="" type="checkbox"/> IKUN3900-6 As an industry partner, I want to register, so that I can login.	待办 ▼	-	👤	
<input checked="" type="checkbox"/> IKUN3900-7 As a student, I want to login, so that I can find project.	待办 ▼	-	👤	
<input checked="" type="checkbox"/> IKUN3900-8 As an academic supervisor, I want to login, so that I can find projects.	待办 ▼	-	👤	
<input checked="" type="checkbox"/> IKUN3900-9 As an industry partner, I want to login, so that I can post project.	待办 ▼	-	👤	
<input checked="" type="checkbox"/> IKUN3900-10 As a student, I want to logout, so that I can change account.	待办 ▼	-	👤	
<input checked="" type="checkbox"/> IKUN3900-11 As an academic supervisor, I want to logout, so that I can change account	待办 ▼	-	👤	
<input checked="" type="checkbox"/> IKUN3900-12 As an industry partner, I want to logout, so that I can change account.	待办 ▼	-	👤	

## Sprint 2

▼ Spring 2 13 10月 – 3 11月 (20 个事务)			0 0 0 开始冲刺	...
<input checked="" type="checkbox"/> IKUN3900-13 As a student, I want to publish my resume on my own homepage, so that I can help academic supervisors and industry p...	待办 ▼	-	👤	
<input checked="" type="checkbox"/> IKUN3900-14 As a student, I want to make my personal information more detailed, so that I can get recommendation of suitable projec...	待办 ▼	-	👤	
<input checked="" type="checkbox"/> IKUN3900-15 As an academic supervisor, I want to publish my resume on my own homepage, so that I can help students and industry ...	待办 ▼	-	👤	
<input checked="" type="checkbox"/> IKUN3900-16 As a student, I want to browse through a projects list, so that I can look for all projects clearly.	待办 ▼	-	👤	
<input checked="" type="checkbox"/> IKUN3900-17 As a student, I want to check the detailed information about a specific project, so that I can determine whether I'm good ...	待办 ▼	-	👤	
<input checked="" type="checkbox"/> IKUN3900-18 As a student, I want the system to automatically recommend the suitable project for me, so that I can find projects more e...	待办 ▼	-	👤	
<input checked="" type="checkbox"/> IKUN3900-19 As a student, I want to submit my resume to projects, so that I can apply for projects.	待办 ▼	-	👤	
<input checked="" type="checkbox"/> IKUN3900-20 As a student, I want to have a list of all applied projects, so that I can check, revise and cancel all these projects.	待办 ▼	-	👤	
<input checked="" type="checkbox"/> IKUN3900-21 As an academic supervisor, I want to browse through a projects list, so that I can look for all projects clearly.	待办 ▼	-	👤	
<input checked="" type="checkbox"/> IKUN3900-22 As an academic supervisor, I want to check the detailed information about a specific project, so that I can determine whet...	待办 ▼	-	👤	
<input checked="" type="checkbox"/> IKUN3900-23 As an academic supervisor, I want to have a list of all applied projects, so that I can check, revise and cancel all these proj...	待办 ▼	-	👤	
<input checked="" type="checkbox"/> IKUN3900-24 As an industry partner, I want to make project information more detailed, so that students and academic supervisor can le...	待办 ▼	-	👤	
<input checked="" type="checkbox"/> IKUN3900-25 As an industry partner, I want to post the project, so that I can find the academic supervisor and students.	待办 ▼	-	👤	
<input checked="" type="checkbox"/> IKUN3900-26 As an industry partner, I want to have students recommendation system, so that I can find students who suits the project ...	待办 ▼	-	👤	
<input checked="" type="checkbox"/> IKUN3900-27 As an industry partner, I want to have a list of all apply students, so that I can check their information more clearly and ma...	待办 ▼	-	👤	
<input checked="" type="checkbox"/> IKUN3900-28 As an industry partners, I want to choose an academic supervisor, so that my project can be supervised.	待办 ▼	-	👤	
<input checked="" type="checkbox"/> IKUN3900-29 As an industry partners, I want to have a list of all apply academic supervisors, so that I can check their information more ...	待办 ▼	-	👤	
<input checked="" type="checkbox"/> IKUN3900-30 As a student, I want to have a list of all apply academic supervisors, so that I can check their information more clearly and...	待办 ▼	-	👤	
<input checked="" type="checkbox"/> IKUN3900-31 As an industry partners, I want to have a list of recommendation of academic supervisors, so that I can check their inform...	待办 ▼	-	👤	
<input checked="" type="checkbox"/> IKUN3900-32 As a student, I want to have a list of recommendation of academic supervisors, so that I can check their information more...	待办 ▼	-	👤	

## Sprint 3



▼ Spring 3 3 11月 – 17 11月 (6 个事务)		0 0 0	开始冲刺	...
<input checked="" type="checkbox"/>	IKUN3900-33 As a student, I want to check the updated information of the project and project objective in next sprint, so that I can mak...	待办 ▼	-	👤
<input checked="" type="checkbox"/>	IKUN3900-34 As a student, I want to enter the project main page, so that I can report the project progress and update the information.	待办 ▼	-	👤
<input checked="" type="checkbox"/>	IKUN3900-35 As an academic supervisor, I want to enter the project main page to check the progress of the project and supervising stu...	待办 ▼	-	👤
<input checked="" type="checkbox"/>	IKUN3900-36 As an academic supervisor, I want to provide feedback, so that the alignment between projects and students' learning go...	待办 ▼	-	👤
<input checked="" type="checkbox"/>	IKUN3900-37 As an industry partner, I want to enter the project main page to check the progress of the project and update information.	待办 ▼	-	👤
<input checked="" type="checkbox"/>	IKUN3900-38 As an industry partner, I want to check the performance of students and academic supervisor, so that I can rate my exper...	待办 ▼	-	👤

## Objectives

For students: Students can register, log in, log out, and modify their accounts, ensuring their private information is protected. They can post their resume and details on their profile to attract the attention of academic mentors and industry partners. Students can browse project lists, view project details, express interest in specific projects, submit resumes and portfolios to apply for projects, and receive system recommendations for suitable projects. Once selected, they can access the project homepage, report on project progress and interact with academic mentors and industry partners.

For academic supervisor: Academic supervisors can register, log in, log out, and modify their accounts to ensure the security of private information. They can post their resume on their personal homepage, making their background more accessible to students and industry partners. Academic supervisor can browse program lists, view program details, manage students' applications, and interact with them. They can also receive systematic project recommendations and monitor student performance on the project homepage, providing feedback to improve project consistency and quality.

For Industry Partners: Industry partners can register, log in, log out, and modify their accounts to ensure the security of private information. They can post projects and issues on the system, providing detailed project information including problem statement, desired outcomes, required skills and potential deliverables. Industry partners can browse student and academic tutor profiles, select suitable students and tutors, and manage project collaborations with them. The system will also recommend suitable students and academic tutors to them. Once the project begins, industry partners can view project progress on the project homepage, update information, and evaluate the performance of students and mentors for better collaboration and success.

## Compare with existing system

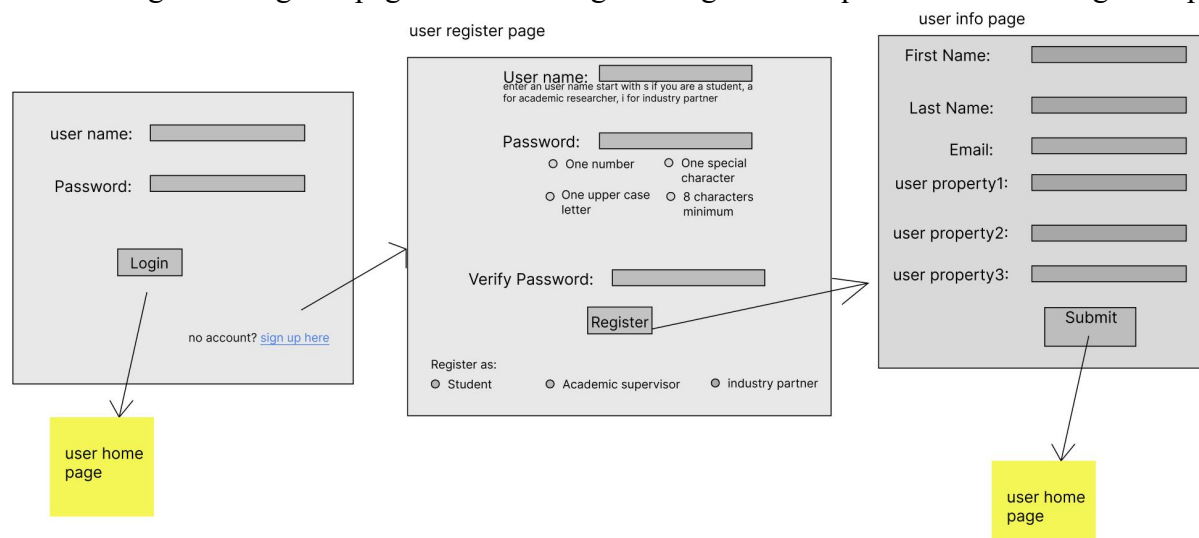
One thing we have to do is user interface (UI) design. Now we plan to do this in a very minimalistic way. The user interfaces of existing recruitment platforms are indeed user-friendly, but not enough.

They all contain a lot of links to commercial partnerships (often in the form of advertisements), which are completely useless to someone who just wants to find a job. Beyond that, there are so many other advanced buttons that it can be confusing. So, we decided to make our platform super easy to use, simple and straightforward.

One thing we do is we can see the progress of the project. The existing recruitment website does not have this function. Students can use this function to report the progress of the project. Academic supervisors and industry partners can better see the progress of the project and get timely responses.

## Interface and flow diagram

1. User login and register page: Users can log in using their unique user name through this page.



Related user story:

As a student, I want a strong password, so that my private information is secure.

As an academic supervisor, I want a strong password, so that my private information is secure.

As an industry partners, I want a strong password, so that my private information is secure.

As a student, I want to register, so that I can login.

As an academic supervisor, I want to register, so that I can login.

As an industry partner, I want to register, so that I can login.

As a student, I want to login, so that I can find projects.

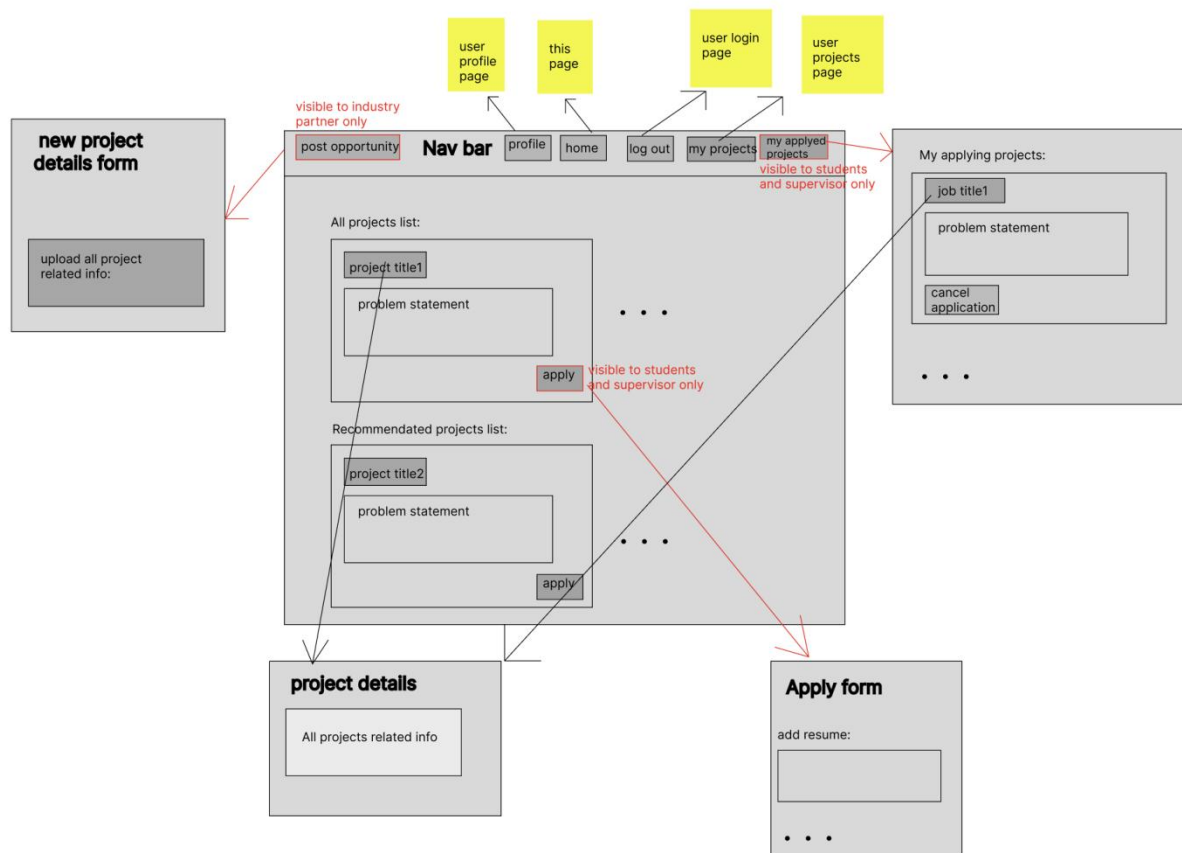
As an academic supervisor, I want to login, so that I can find projects.

As an industry partner, I want to login, so that I can post project.

2. User home page: Users can view projects on this page and navigate to other related pages by clicking buttons in navigation bar (All pages contain same navigation bar as the user home

page. )

(Red frames and words mean that this function is only visible to specific roles or under specific situations.)



Related user story:

As a student, I want to log out, so that I can change account.

As an academic supervisor, I want to log out, so that I can change account.

As an industry partner, I want to log out, so that I can change account.

As a student, I want to browse through a projects list, so that I can look for all projects clearly.

As a student, I want the system to automatically recommend the suitable project for me, so that I can find projects more efficiently.

As a student, I want to submit my resume to projects, so that I can apply for projects.

As a student, I want to have a list of all applied projects, so that I can check, revise and cancel all these projects.

As an academic supervisor, I want to browse through a projects list, so that I can look for all projects clearly.

As an academic supervisor, I want to check the detailed information about a specific project, so that I can determine whether I'm good at it or interested in it.

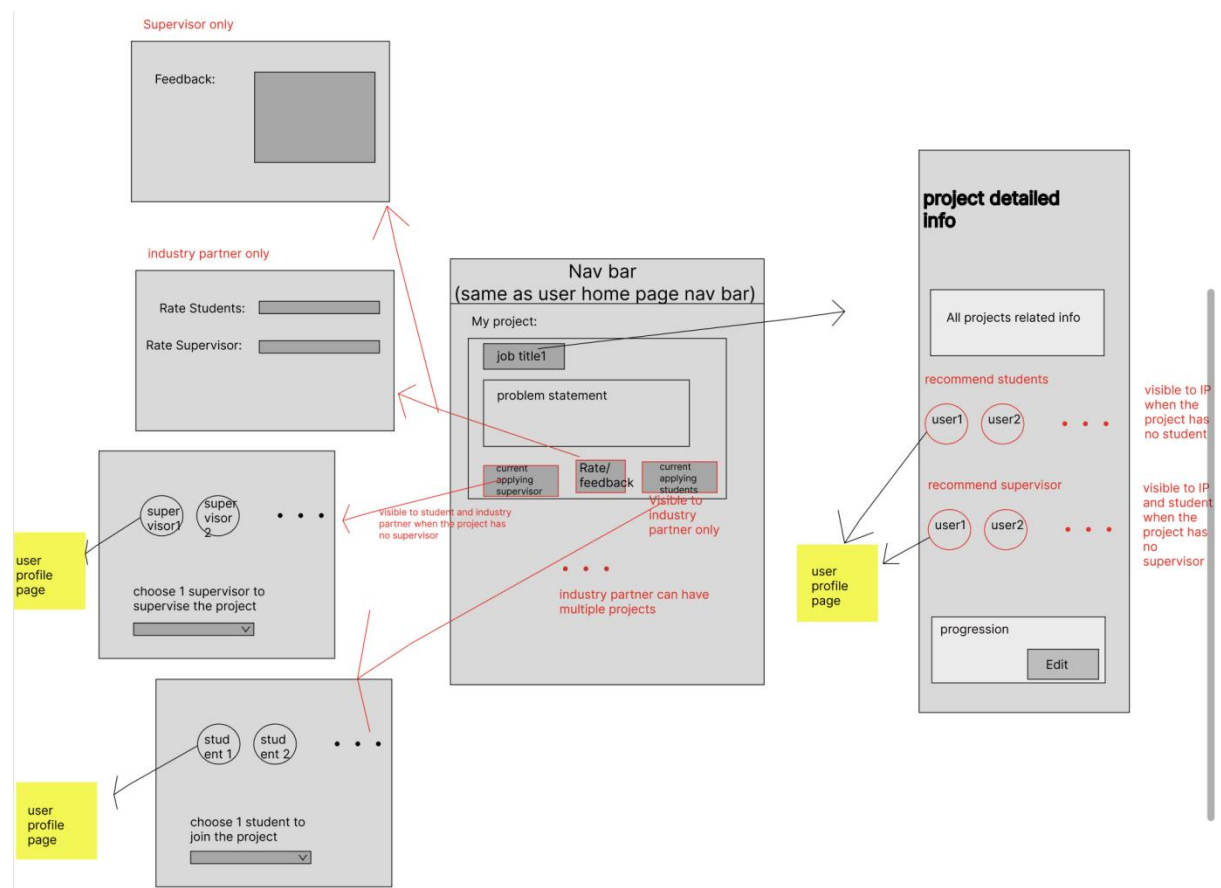
As an academic supervisor, I want to have a list of all applied projects, so that I can check, revise and cancel all these projects.

As an industry partner, I want to make project information more detailed, so that students and

academic supervisors can learn more about it.

As an industry partner, I want to post the project, so that I can find the academic supervisor and students.

3. User project related pages: This page contains a (or a list of) user already joined projects and related information pages. (Red frames and words mean that this function is only visible to specific role or under specific situation.)



#### Related User Story:

As a student, I want to check the detailed information about a specific project, so that I can determine whether I'm good at it or interested in it.

As an industry partner, I want to have students recommendation system, so that I can find students who suit the project more efficiently.

As an industry partner, I want to have a list of all applied students, so that I can check their information more clearly and make choices.

As an industry partner, I want to choose an academic supervisor, so that my project can be supervised.

As an industry partner, I want to have a list of all applied academic supervisors, so that I can check their information more clearly and make choices.

As a student, I want to have a list of all applied academic supervisors, so that I can check their information more clearly and make choices.

As an industry partner, I want to have a list of recommendations of academic supervisors, so

that I can check their information more clearly and make choices.

As a student, I want to have a list of recommendations of academic supervisors, so that I can check their information more clearly and make choices.

As a student, I want to check the updated information of the project and project objectives in the next sprint, so that I can make a new plan or change schedules.

As a student, I want to enter the project main page, so that I can report the project progress and update the information.

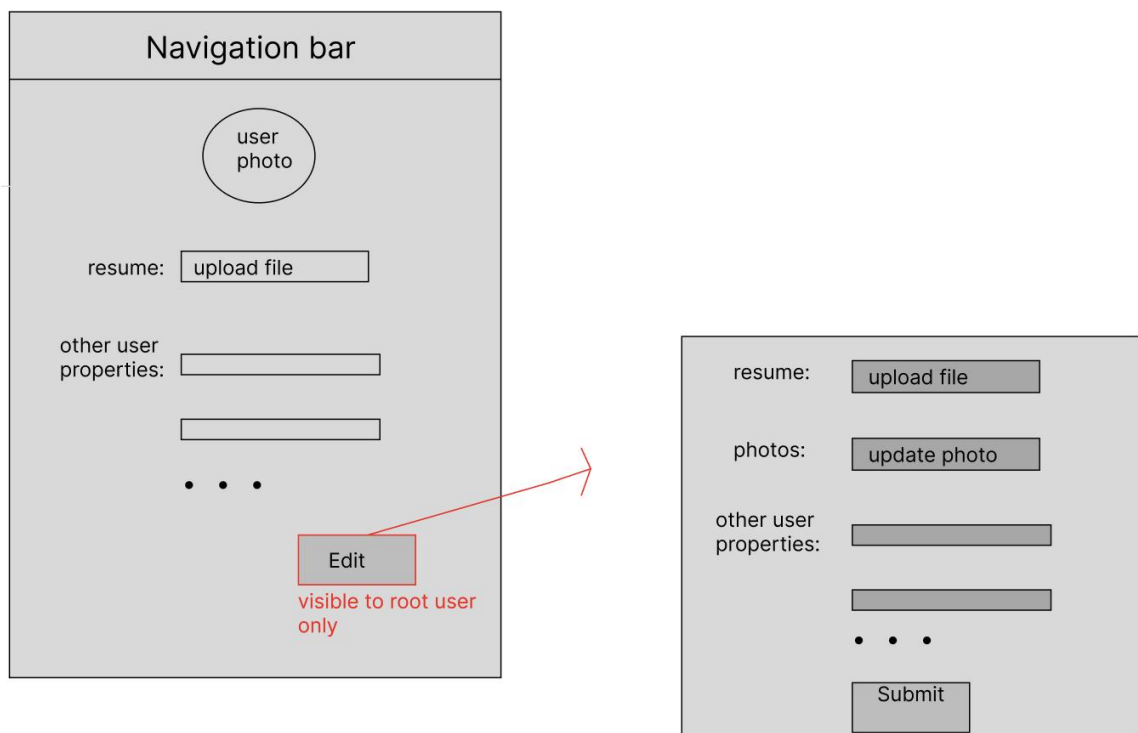
As an academic supervisor, I want to enter the project main page to check the progress of the project and supervise students' performance.

As an academic supervisor, I want to provide feedback, so that the alignment between projects and students' learning goals can be improved.

As an industry partner, I want to enter the project main page to check the progress of the project and update information.

As an industry partner, I want to check the performance of students and academic supervisors, so that I can rate my experience working with them.

4. User profile page: Users can view and edit their own profile information in this page, users can also be directed to another user's profile page to view that users' profile.



Related user story:

As a student, I want to publish my resume on my profile page, so that I can help academic supervisors and industry partners to learn more about me.

As a student, I want to make my personal information more detailed, so that I can get recommendation of suitable project more precise

As an academic supervisor, I want to publish my resume on my profile page, so that I can

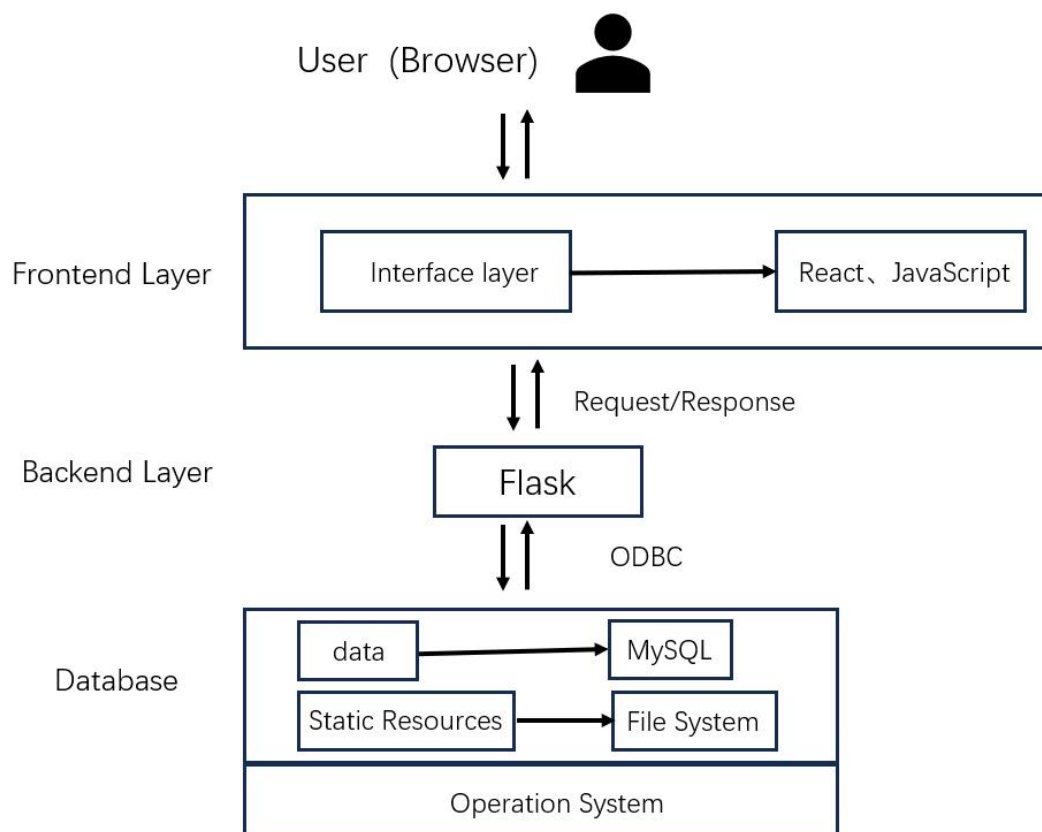
help students and industry partners to learn more about me.

## System Architecture

The architecture of the software consists of three layers.

- Frontend: this part will be built in React and JavaScript.
- Backend: this part will be built in Python Flask.
- The data of the software will be stored in MySQL database. And the static resources (image et al.) will be stored in the File System.

The logic structure of the software is shown below.



## Reference list

Graduate Jobs and Internships in Australia (185 open right now!) [Internet]. GradConnection.  
Available from: <https://au.gradconnection.com/>

LinkedIn Australia: Log In or Sign Up. (2019). *LinkedIn Australia: Log In or Sign Up*. [online]  
Available at: <https://au.linkedin.com/>.

SEEK (2019). *SEEK - Australia's no. 1 jobs, employment, career and recruitment site*. [online]  
SEEK. Available at: <https://www.seek.com.au/>.