Executive Summary (Jiaying Wang)

The design project chosen by the team is to develop an online web application to help students to form teams and find projects for ECE496. In order to have a high completion of the online system, the project was divided into two parts, team finder and project finder. Our team's main focus is to accomplish the project finder. The goal of this project is to develop an online system that provides a platform for students and professors to post projects, help students find suitable project and let professors to claim projects to supervise for the ECE496 Design Project Course.

To accomplish the project in time, the project was distributed into two major parts: frontend and backend implementation. Zhi Hao and Haoke were responsible for background implementation, including establishing the web server and creating the database schema. While Yu Tong and Jiaying worked on implementing web pages and user interface. After both side completed their task, Yu Tong and Jiaying connected the frontend with the backend so that the web application can get and update with the data and make everything functionable.

Tests were applied separately on frontend and backend as well. For frontend, several tests are done manually, such as actions like creating, editing, liking and discussing about projects can be successfully performed. Both getting origin data from backend and transmitting updated information back to backend have been tested as well. For backend, tests are done manually. Zhi Hao and Haoke use postman application to send GET and POST request to each backend APIs, all response are as same as expected response.

In general, the final design for project finder has successfully met the project's goal and requirements as proposed. In addition, the team also managed to integrate the project finder with the other team's team finder. By combining two projects, the new ECE496 online system now can allow users to find, post and discuss about projects; students can form teams and get recommendation for projects based on their interests. Two teams will get some real users to test the system locally before the Design Fair and fix any potential bugs. Then the system will be put online and let real users to use and commend on the new system and hopefully the design can be actually put in use for future ECE496 course.

Initial Frontend Implementation

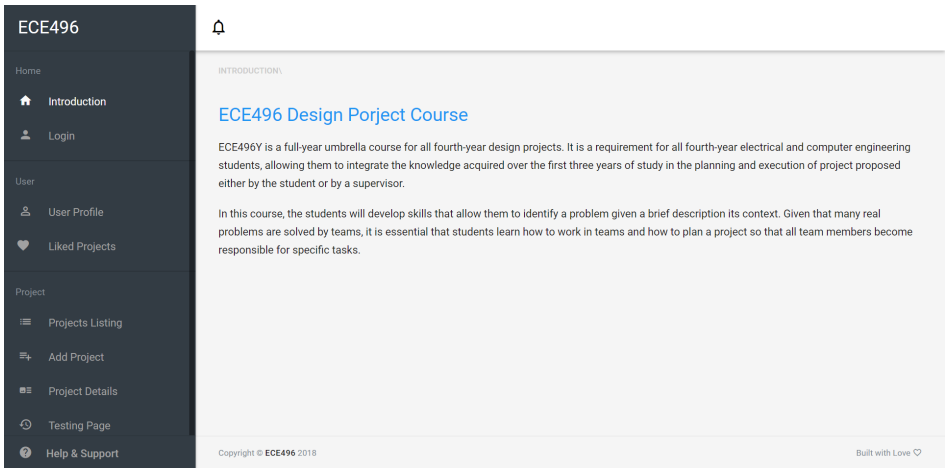


Figure 1: ‘Introduction’ page from initial version

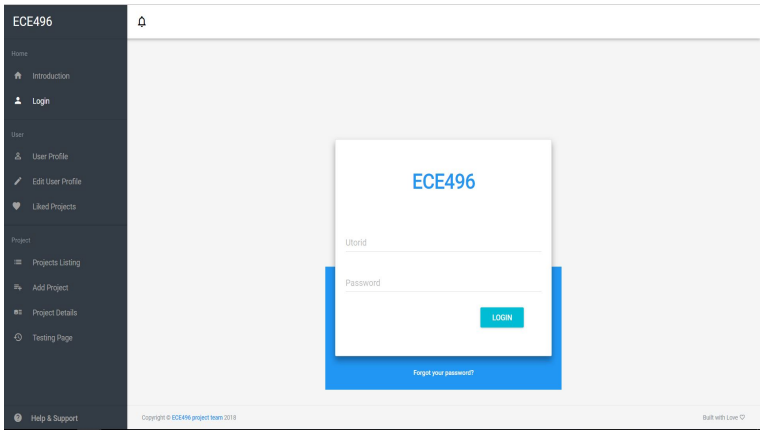


Figure 2: ‘Login’ page from initial version

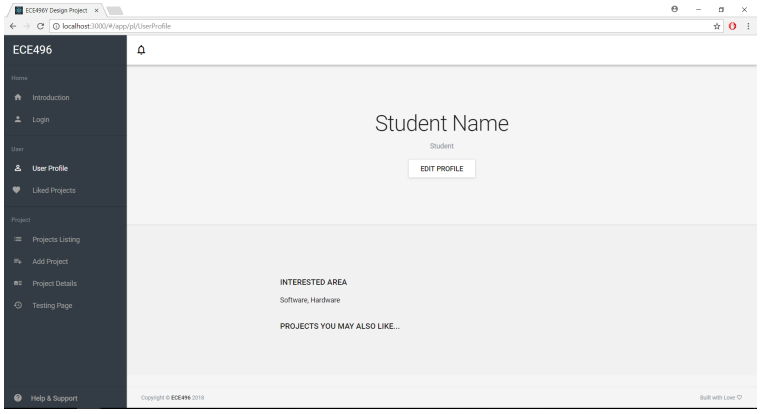


Figure 3: ‘Introduction’ page from initial version

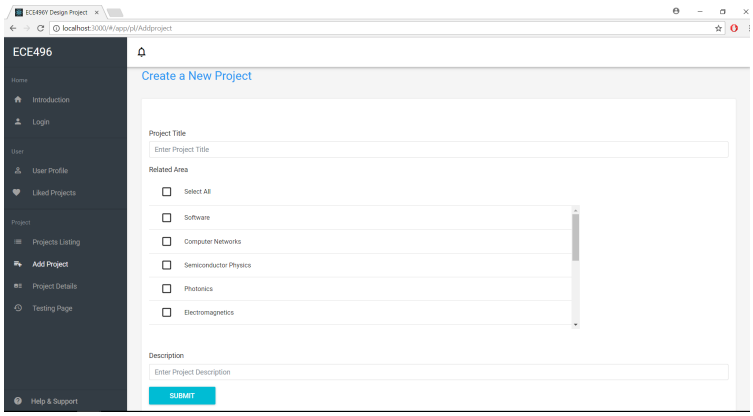


Figure 4: ‘Creating project’ page from initial version

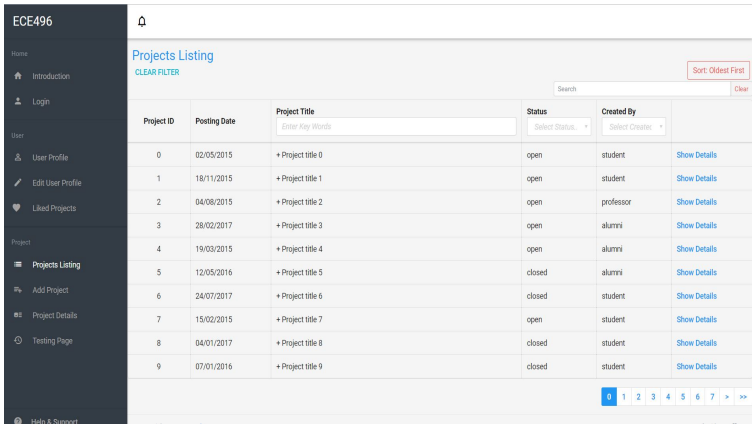


Figure 5: ‘Project listing’ page from initial version

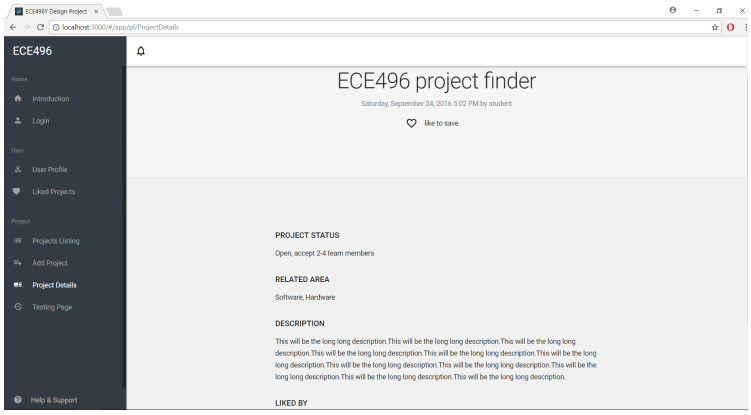
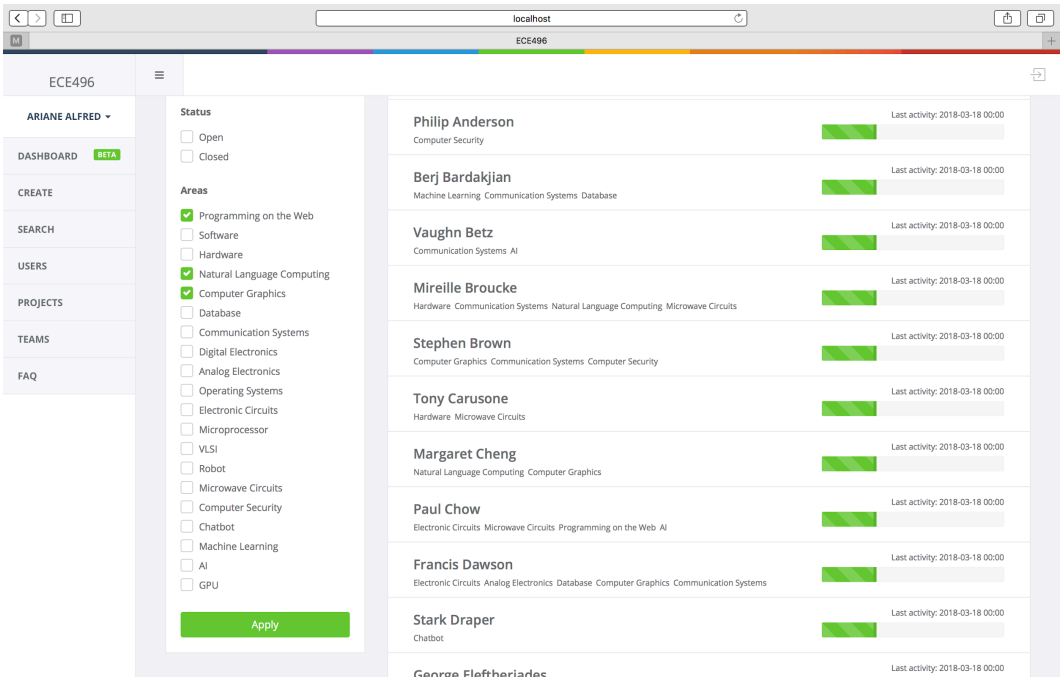


Figure 6: ‘Project details’ page from initial version

Final Frontend Implementation

Figure 1: ‘Search page’ for projects, users and teams.



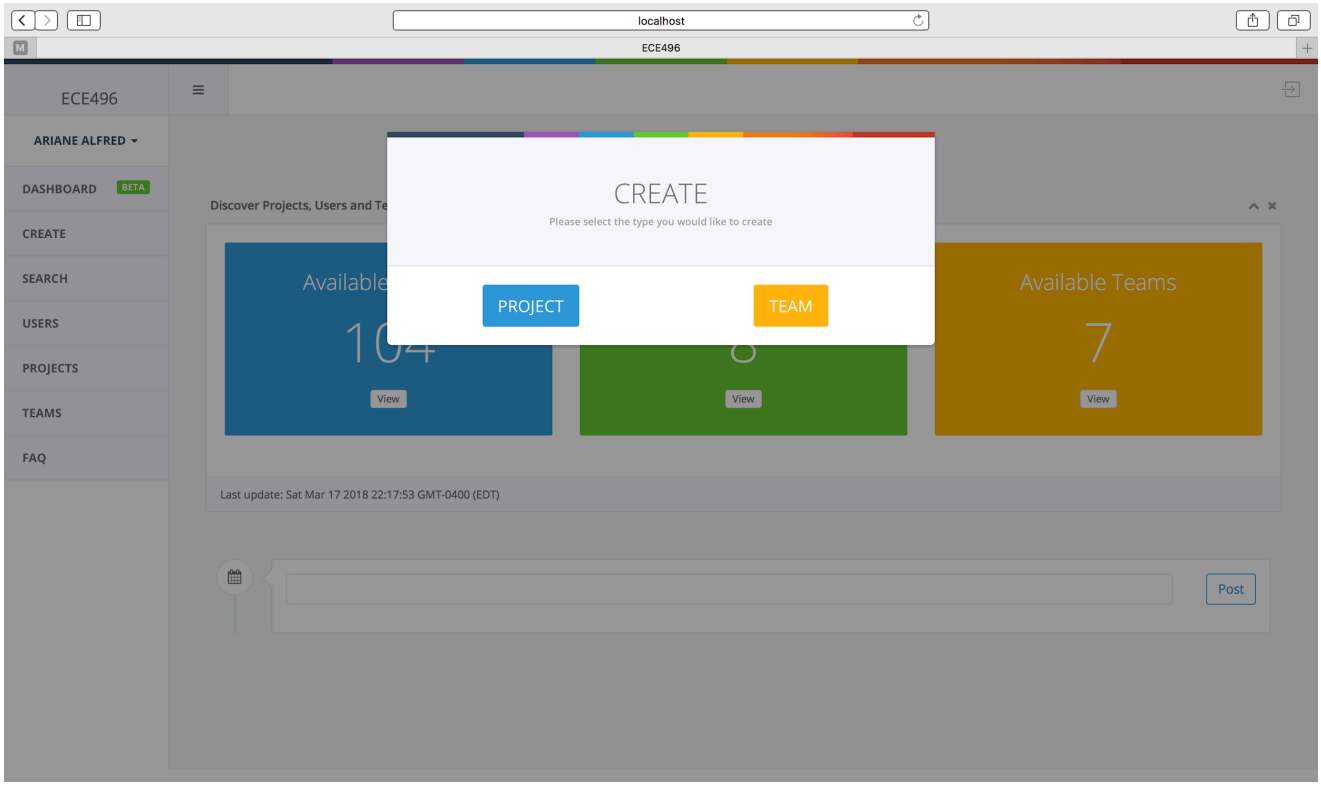


Figure 2: ‘Create page’ to create project or team

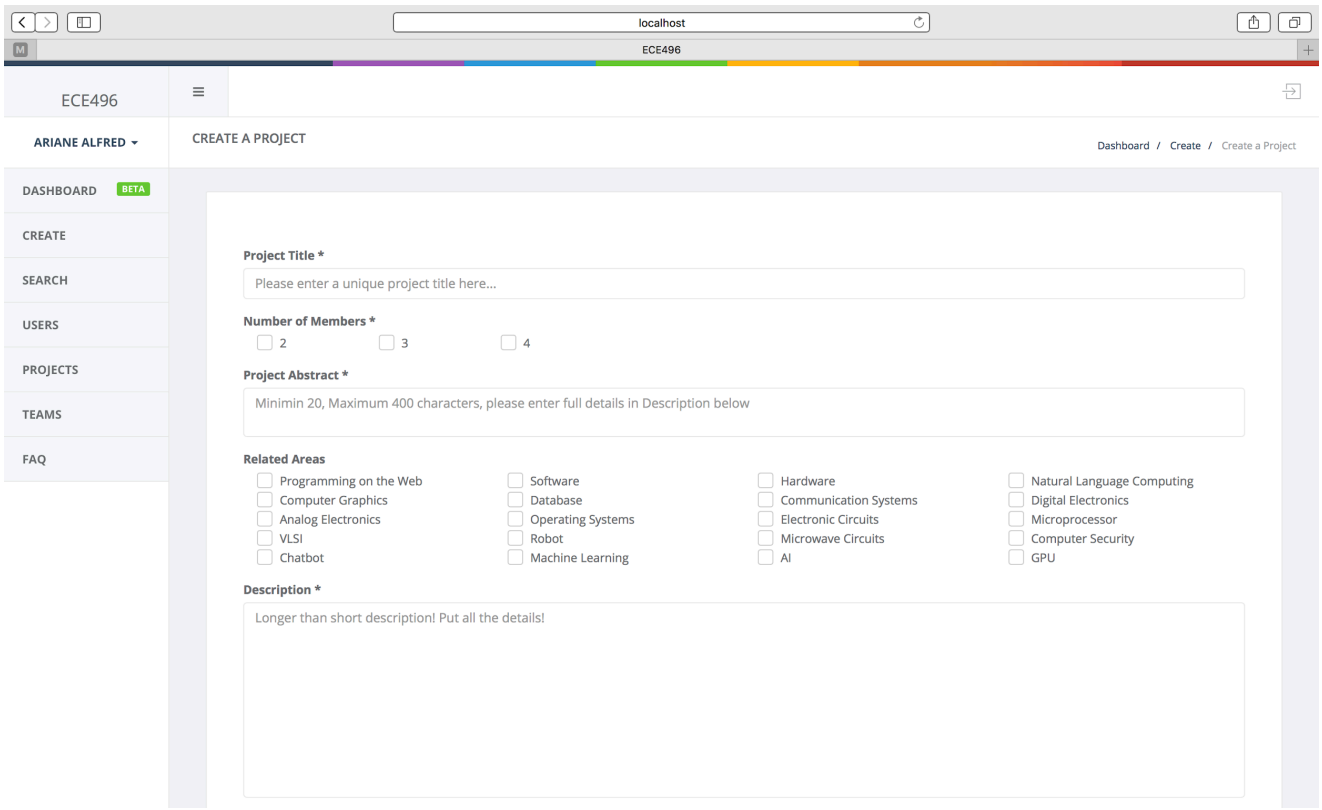


Figure 3: 'Create New Project' Page

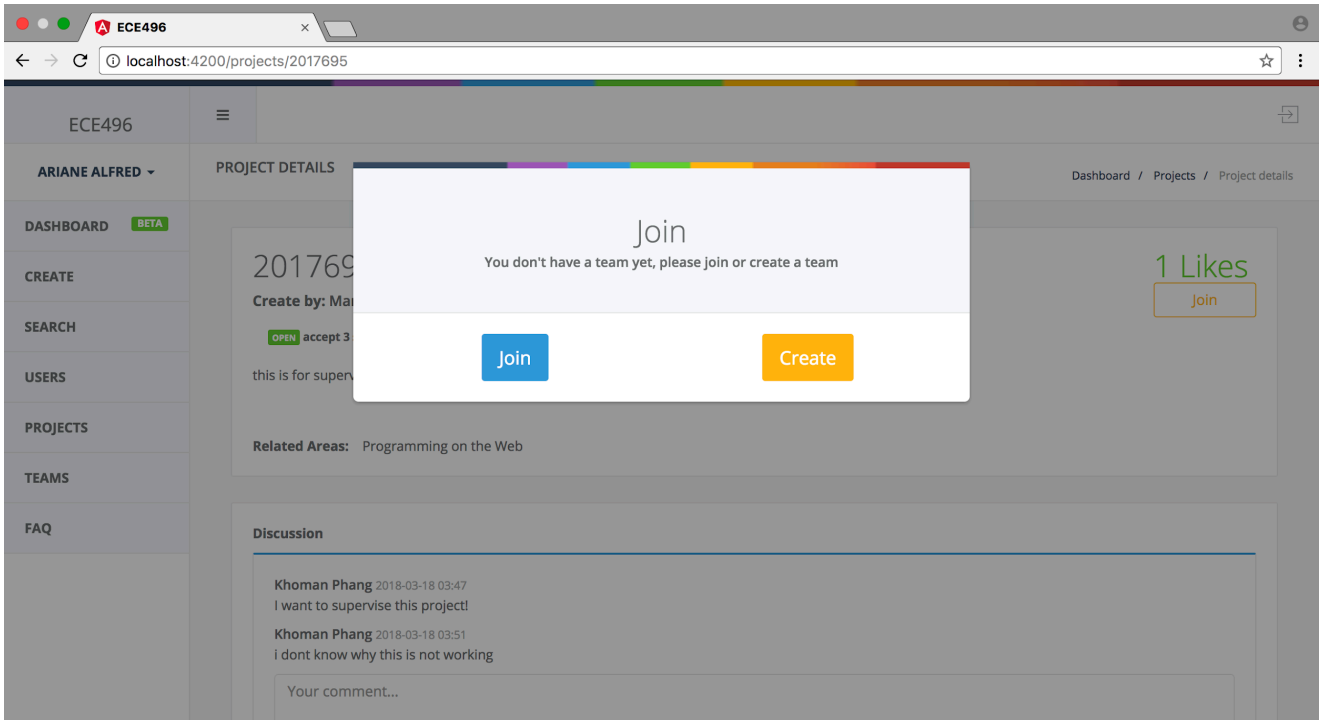


Figure 4: ‘Join’ a project if user already has a team or create a new team otherwise

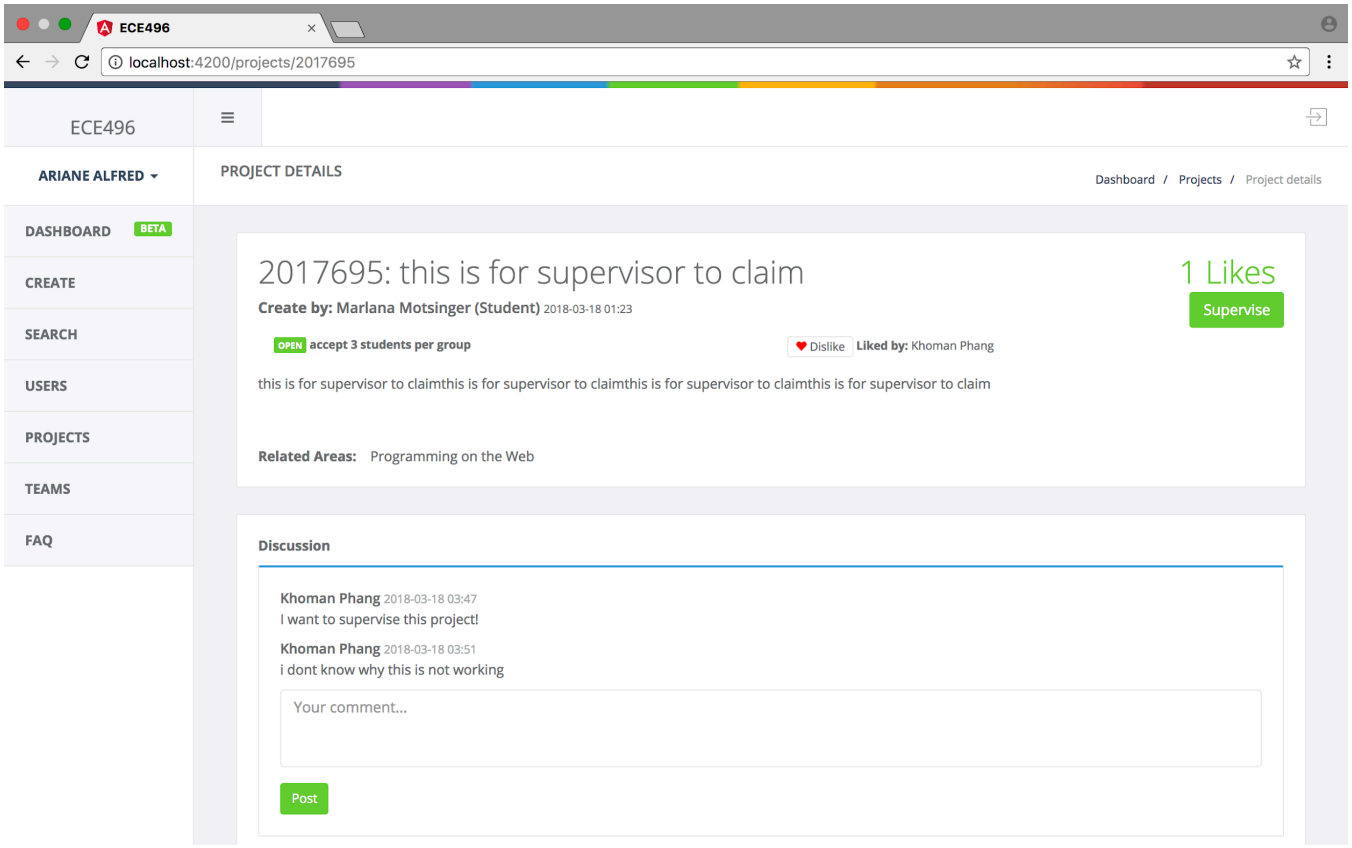


Figure 5: ‘Project Detail’ Page

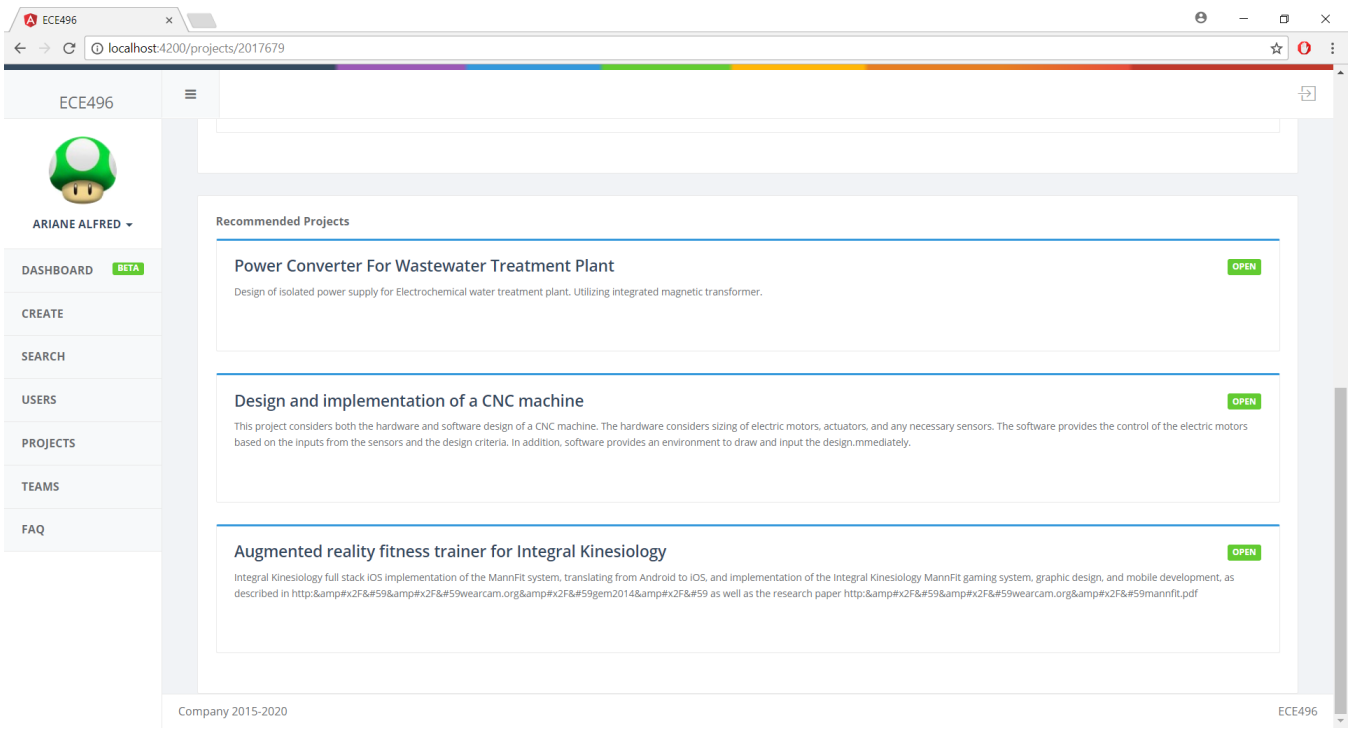


Figure 6: ‘Recommendation’ section on project detail page

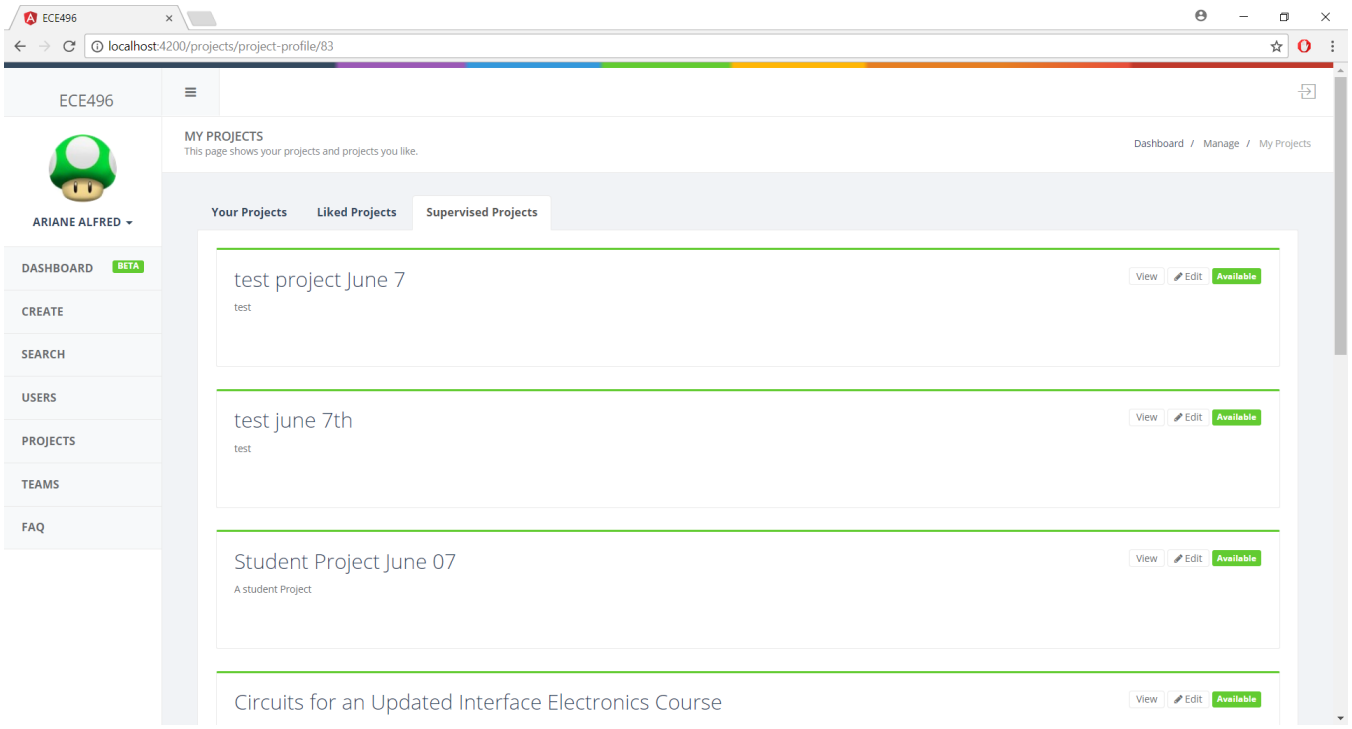


Figure 7: 'Project Profile' page showing the projects that are supervised by the user (if professor)

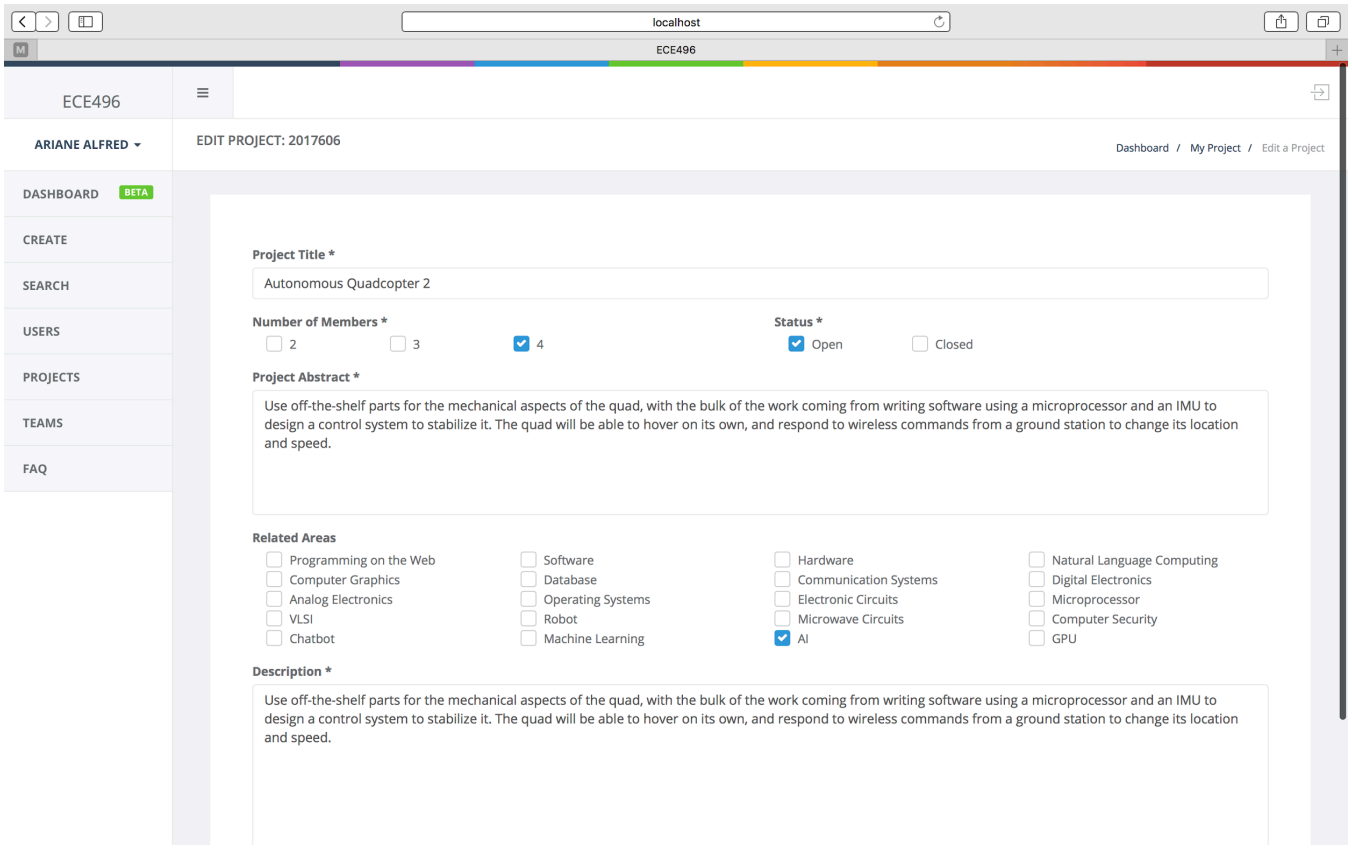


Figure 8: 'Edit your project' page

Appendix F: Frontend Testing

* backend testing also incorporated into frontend testing

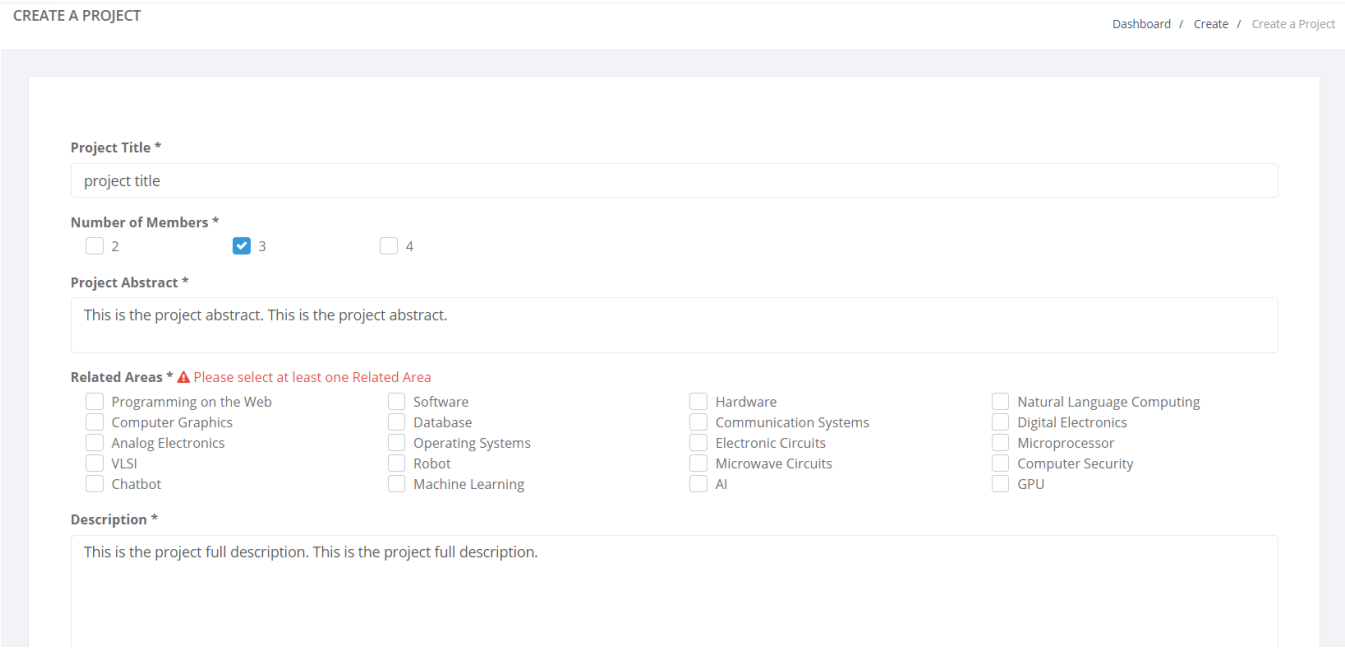


Figure 1: Result of creating a project without choosing any related areas.

User is not able to create a project without choosing any related areas. An error message will be shown.

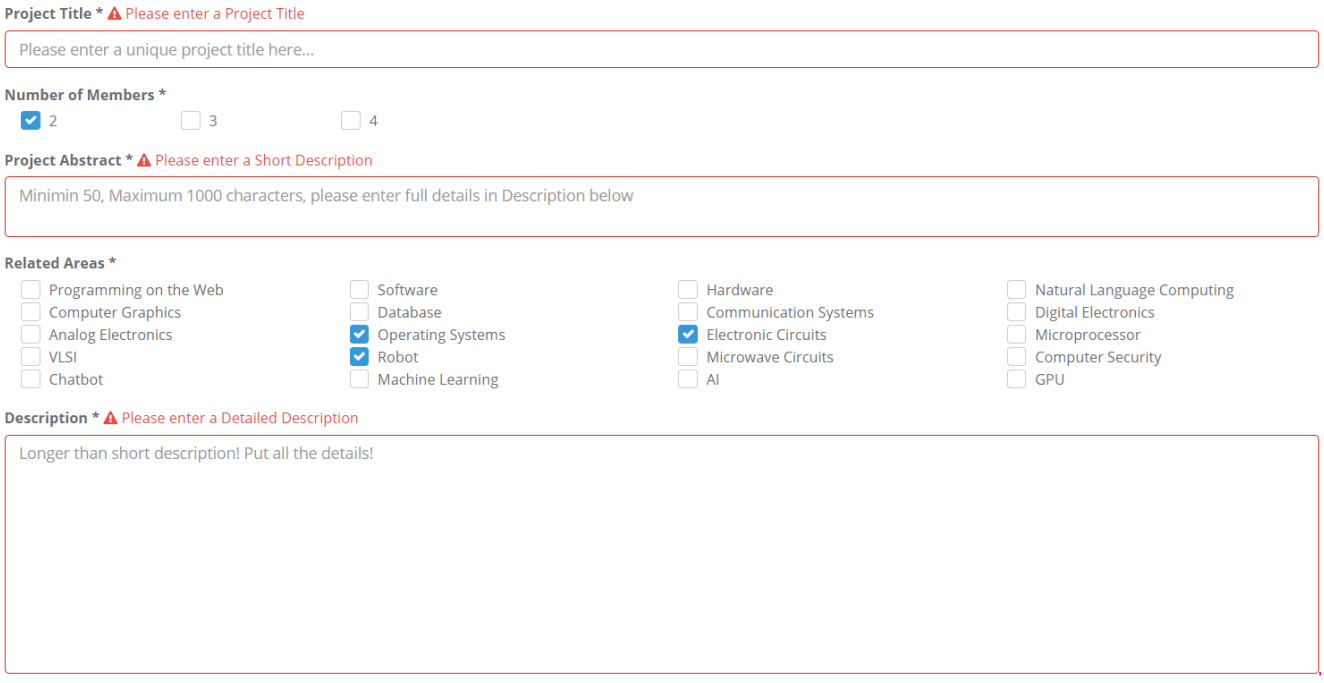


Figure 2: Result of create a project without typing in required information

User is not able to create a project without typing in required information.

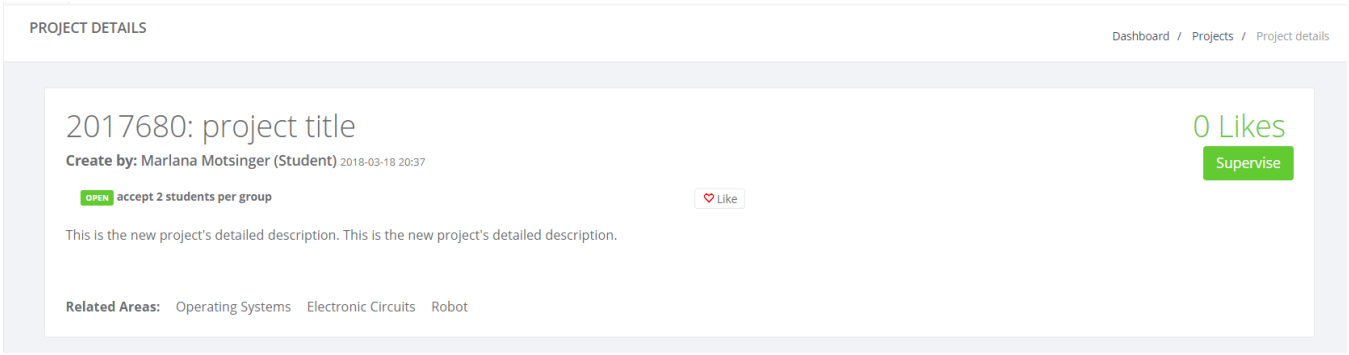


Figure 3: Result of create a project with correct information

After typing in the correct information, the project can be created, backend will return a project ID and frontend will redirect the page to the project details page using the project ID returned. For backend, newly created project is able to show up in the database after saving. And the project's information is also included in the combined data sent to the frontend.

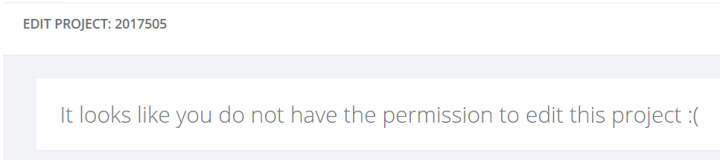
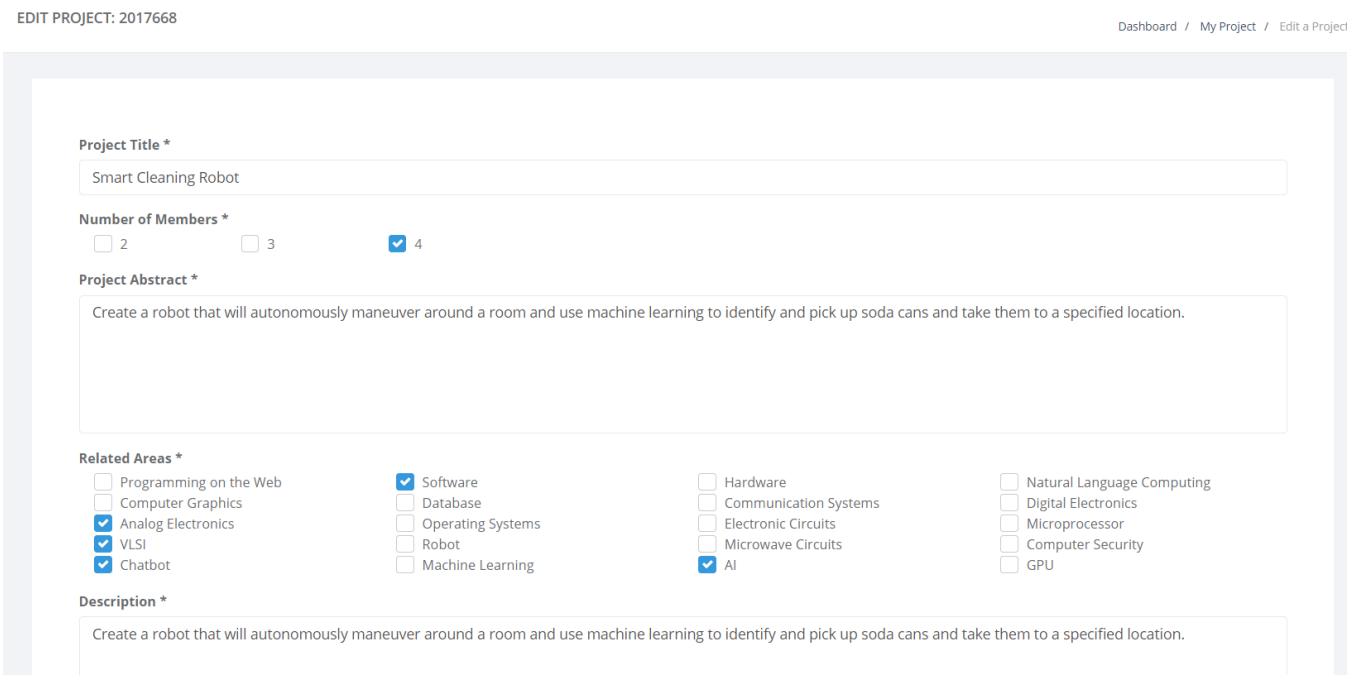


Figure 4: Result of edit a project as a student that is not the project creator



Students are not able to edit projects that are not created by him/her.

Figure 5: Result of edit a project as project creator

The user is able to edit the project, but edit status option is not shown on the page, which means they are not able to edit the project's status.

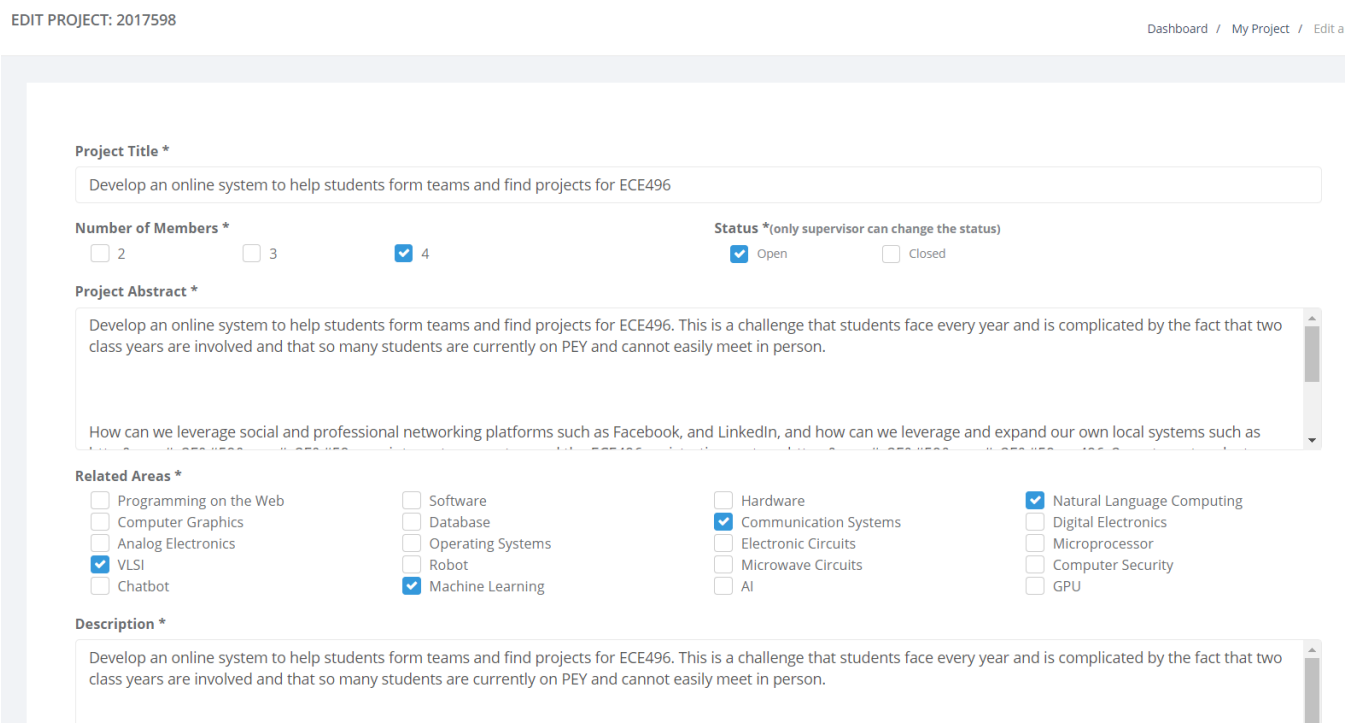


Figure 6: Result of edit a project as supervisor of the project

Supervisor of the project is able to edit the project and change the status of the project. After the user edited the project information, the project will be updated.

Figure 7.a: The POST request for liking a project sent from frontend to backend

Figure 7.b: Result of like a project in the project details page.

When the user clicks on the like button, frontend will sent a request to backend, and the information in the database will be updated by backend.

Figure 8.a: The POST request for unliking a project sent from frontend to backend

Figure 8.b: Result of unlike a project in the project details page.

When the user clicks on the dislike button, frontend will sent a request to backend, and the information in the database will be updated by backend.

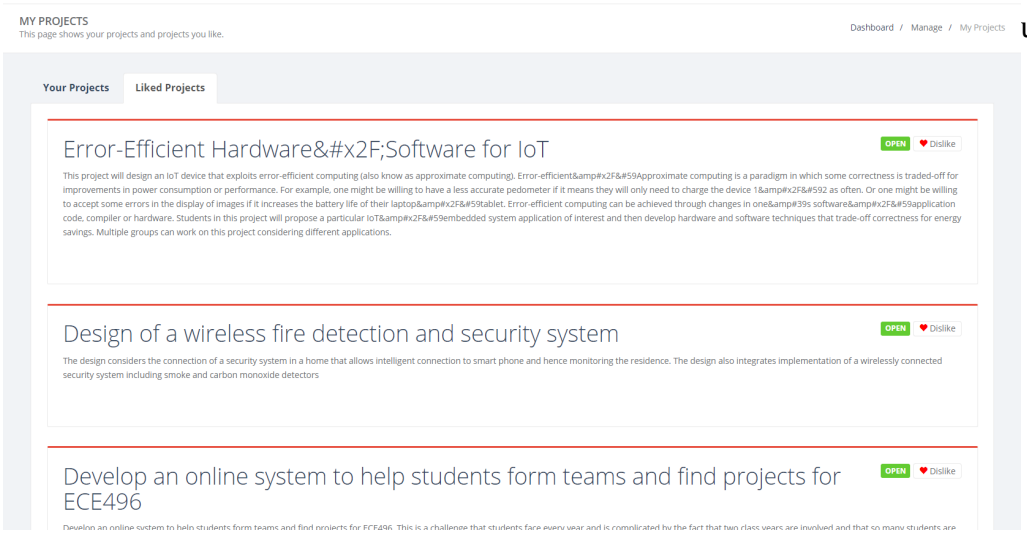


Figure 9.a: Result of unlike a project in the project profile page (Before unliking)

Figure 9.b: The POST request for unliking a project sent from frontend to backend

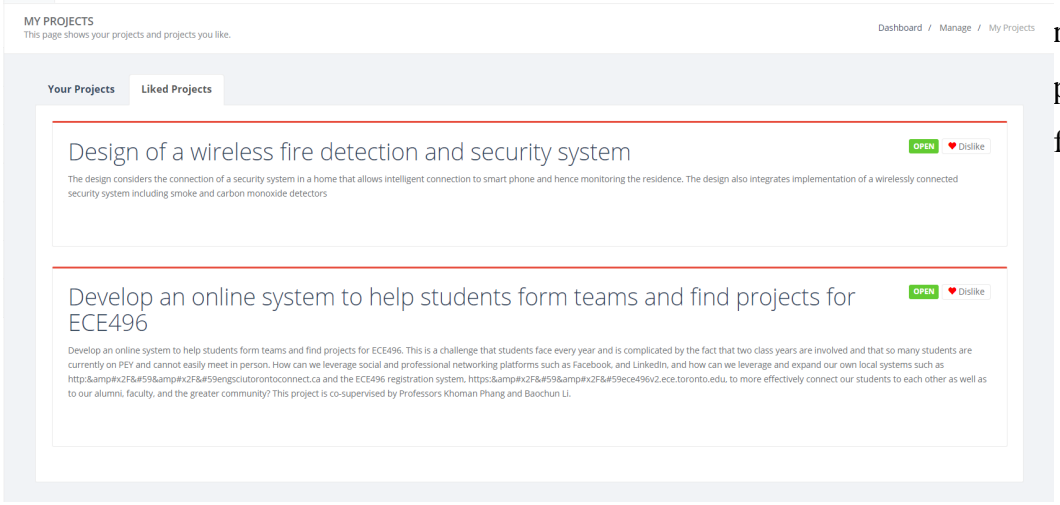


Figure 9.c: Result of unlike a project in the project profile page

The information in the database will be updated, and the project will be removed from liked projects list.

Figure 10.a: Result of claim a project by professor (Before clicking the 'Supervise' button)

Figure 10.b: The POST request for claiming project sent from frontend to backend

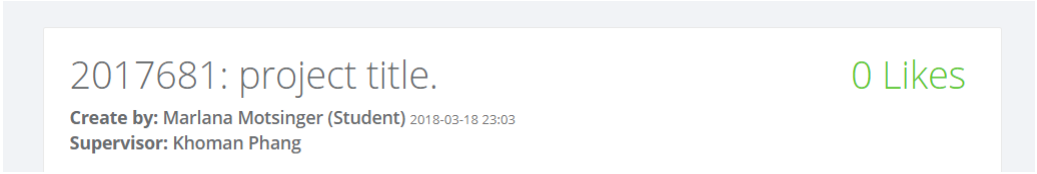
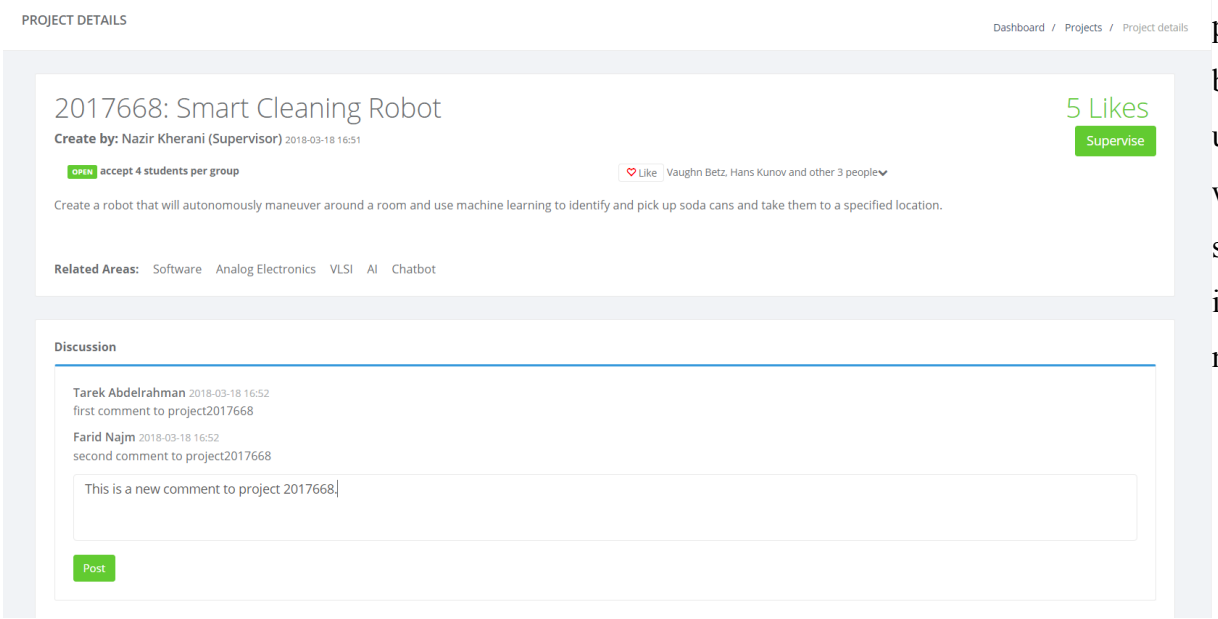


Figure 10.c: Result of claim a project by professor

Professors are able to claim projects by clicking the supervise button. The information on the project details page will be updated with the supervisor information.



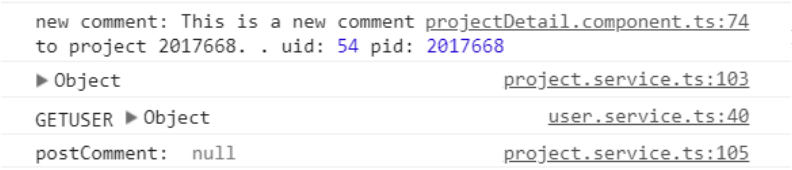


Figure 11.a: Result of adding a comment in a project (Before commenting)

Figure 11.b: The POST request for adding comment sent to backend from frontend

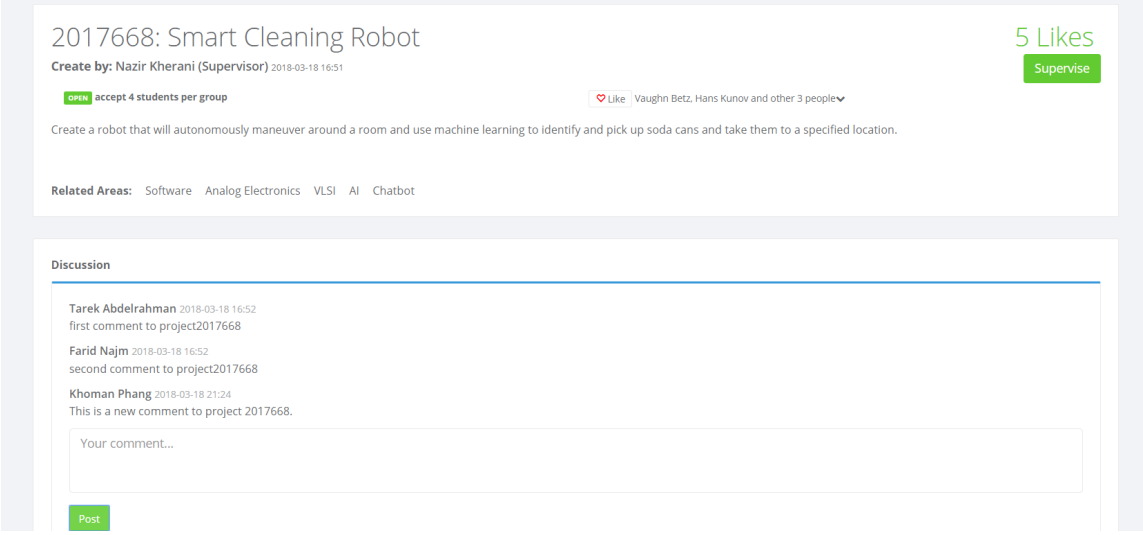


Figure 11.c: Result of adding a comment in a project

Users are able to add comments under each project, and the comments will be displayed in the project details page.

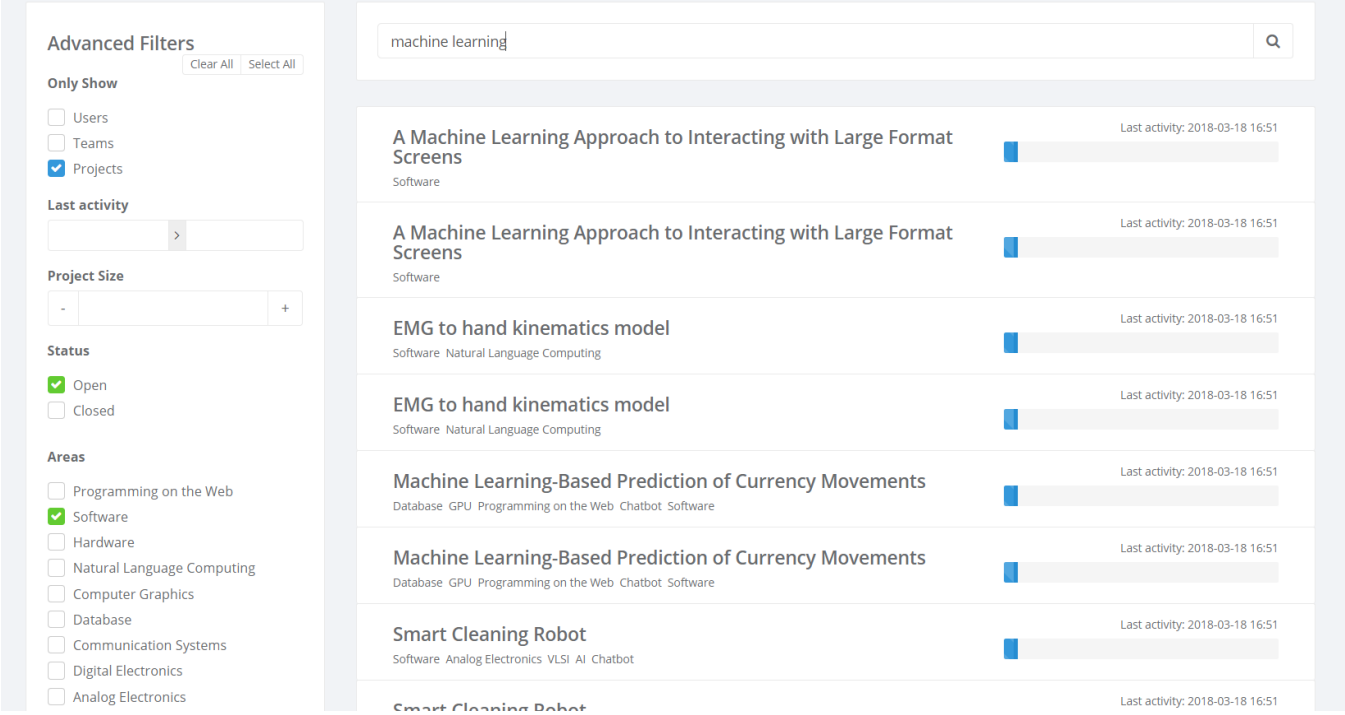
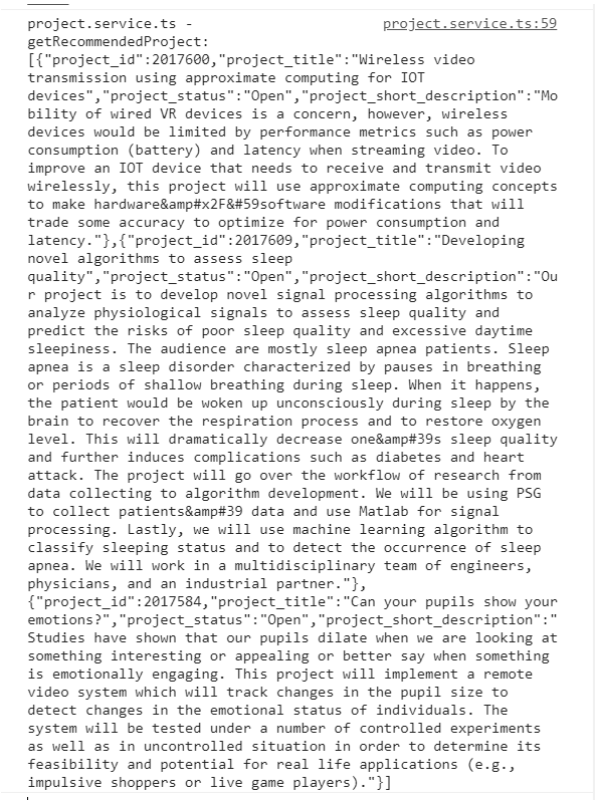


Figure 12: Result of project search page with filters applied and keywords typed

Project listing page is functionally, users are able search and filter projects using the search bar and filters. Additionally, frontend is able to retrieve from the first project to the last project in the database.



```
project.service.ts -                                    project.service.ts:59
getRecommendedProject:
[{"project_id":2017600,"project_title":"Wireless video
transmission using approximate computing for IOT
devices","project_status":"Open","project_short_description":"Mo
bility of wired VR devices is a concern, however, wireless
devices would be limited by performance metrics such as power
consumption (battery) and latency when streaming video. To
improve an IOT device that needs to receive and transmit video
wirelessly, this project will use approximate computing concepts
to make hardware&amp;#x2F&#59software modifications that will
trade some accuracy to optimize for power consumption and
latency."},{"project_id":2017609,"project_title":"Developing
novel algorithms to assess sleep
quality","project_status":"Open","project_short_description":"Ou
r project is to develop novel signal processing algorithms to
analyze physiological signals to assess sleep quality and
predict the risks of poor sleep quality and excessive daytime
sleepiness. The audience are mostly sleep apnea patients. Sleep
apnea is a sleep disorder characterized by pauses in breathing
or periods of shallow breathing during sleep. When it happens,
the patient would be woken up unconsciously during sleep by the
brain to recover the respiration process and to restore oxygen
level. This will dramatically decrease one&amp;#39s sleep quality
and further induces complications such as diabetes and heart
attack. The project will go over the workflow of research from
data collecting to algorithm development. We will be using PSG
to collect patients&amp;#39 data and use Matlab for signal
processing. Lastly, we will use machine learning algorithm to
classify sleeping status and to detect the occurrence of sleep
apnea. We will work in a multidisciplinary team of engineers,
physicians, and an industrial partner."},
{"project_id":2017584,"project_title":"Can your pupils show your
emotions?","project_status":"Open","project_short_description":"
Studies have shown that our pupils dilate when we are looking at
something interesting or appealing or better say when something
is emotionally engaging. This project will implement a remote
video system which will track changes in the pupil size to
detect changes in the emotional status of individuals. The
system will be tested under a number of controlled experiments
as well as in uncontrolled situation in order to determine its
feasibility and potential for real life applications (e.g.,
impulsive shoppers or live game players)."}]
```

Figure 13.a: Recommended projects got from backend API

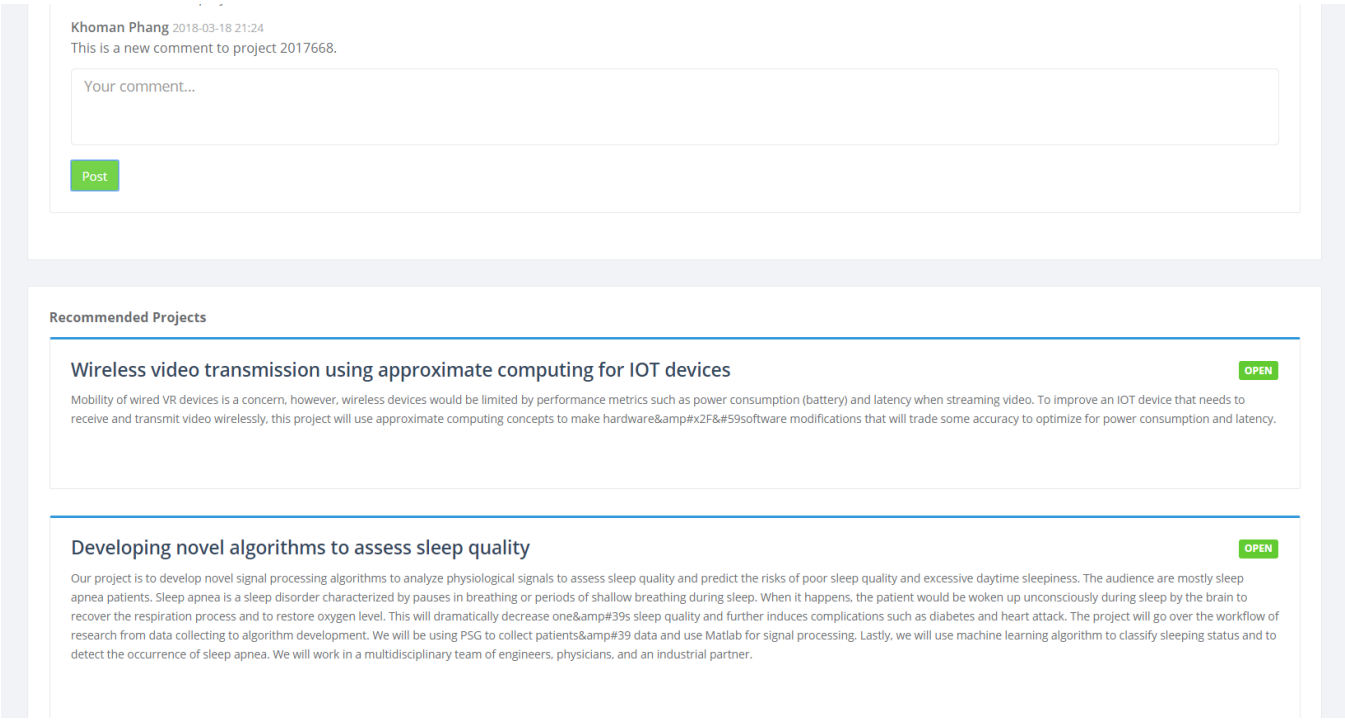


Figure 13.b: Result of recommended projects for users under a project

The recommended projects for users are located below discussion area under each project.

Users are able to see similar projects in every project details page.

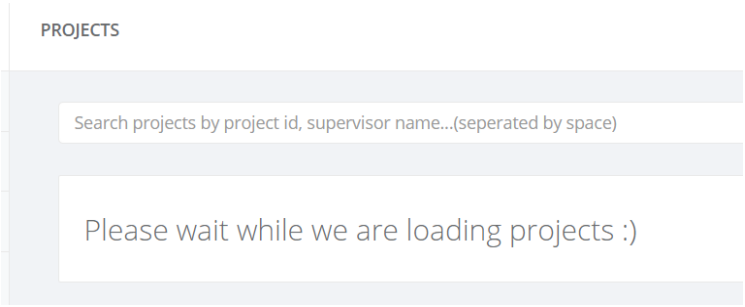


Figure 14.a: Message shown when the system is loading.