IPRO-497-628:
GLOBAL SOFTWARE DEVELOPMENT

Presents

THE ILLINOIS TECH COURSE SCHEDULING APP

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I. Introduction

a. Problem Statement

Creating a schedule at Illinois Institute of Technology can be a hassle because of the vast amount of class options and requirements. Our app simplifies the task for students by taking the classes the user has taken and recommending classes that are required and fit their schedule.

b. Scope of Project

Due to time constraints and feasibility issues, the scope of this project will not be aimed at the entire student population of the school, but rather only a portion of it. For now, this web application will only work for undergrad students who major in Computer Science, Computer Engineering, and Computer and Cybersecurity Engineering. We chose these majors because they share many courses in their curriculums, making it easier to implement in our project.

However, it is important to note that this is only a temporary scope. This scope could definitely be widened if this project goes on to future development.

II. Solution

a. Teams

Initially, there were two teams: the front-end team and the back-end team. However, towards the end of the semester, everyone migrated to full-stack development.

i. Front-end

This team was in charge of the website itself. It worked with everything on the client side, or basically, anything that the users can see. Front-end development included the UI of the website, its appearance, the weekly calendar, its interactivity with users, page redirects, as well as its communication with the API in the back-end.

For this part of the project, we used HTML, JavaScript, and CSS. The initial members were Robert Soler and Nabilah Siddiqui.

ii. Back-end

This team was in charge of the server-side of the application. It worked with everything essential that the users could not see. This included the API, the recommendation algorithm, the database, and the web scraper among all others.

The language used for the back-end was Python, and the Flask library was used as the framework for the web app's API. Additionally, PostgreSQL was used for the database. The members were initially Marcin Landa, Nadeem Hussein, and Hans Guttormsen.

III. Web Application

Below are some screenshots and descriptions of pages in our web application:

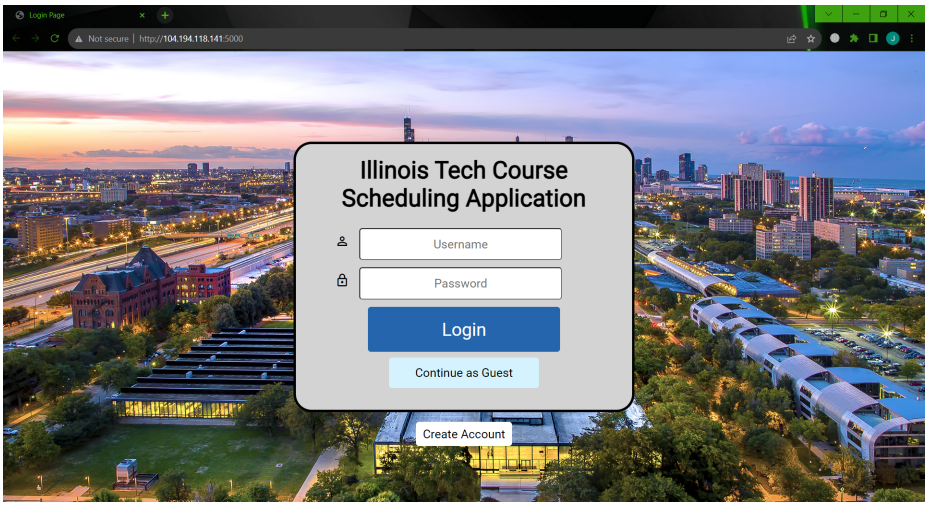


Figure 1: *Login Page. Here you can log into your account.*

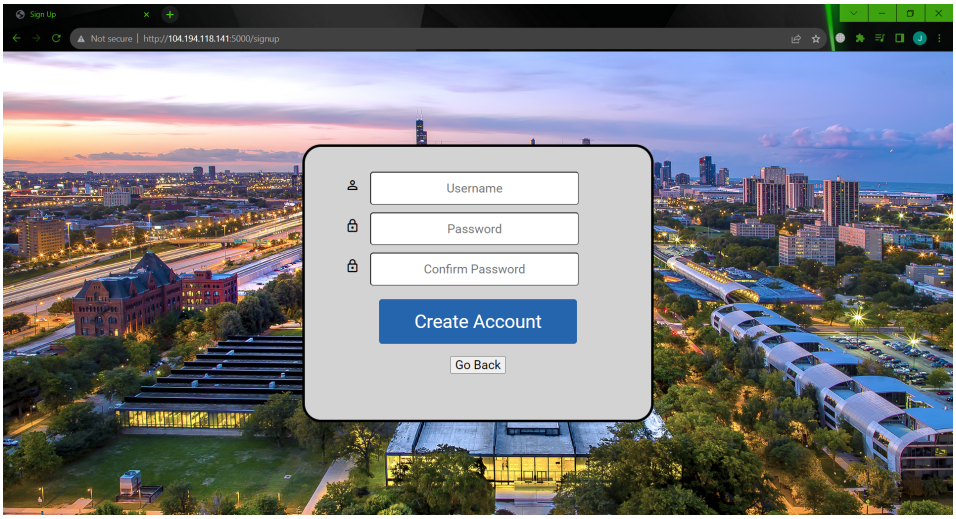
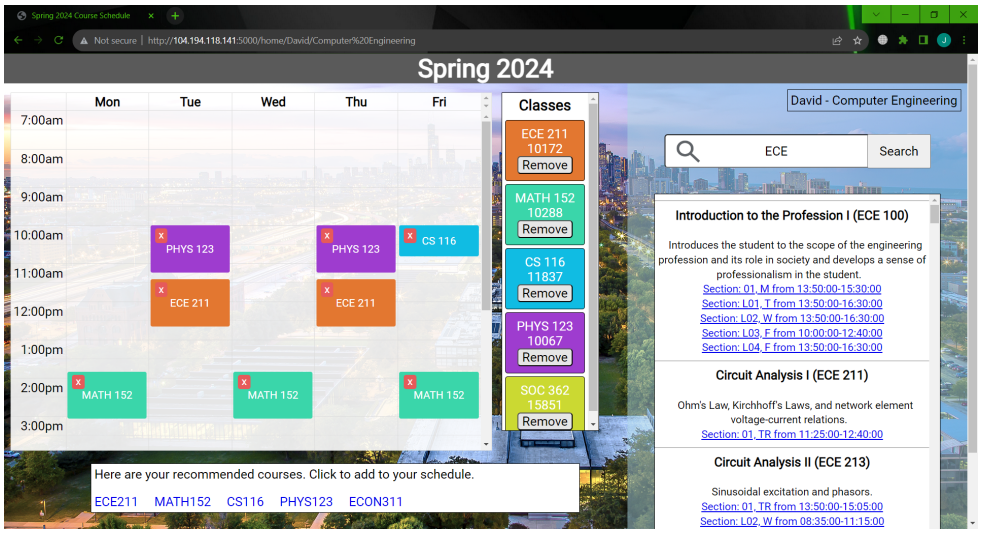


Figure 2: *Create Account Page. This is where you create an account for our website by inputting your credentials.*

Figure 3: *Scheduling Page. This is where your current schedule, as well as the recommended classes, will be displayed.*



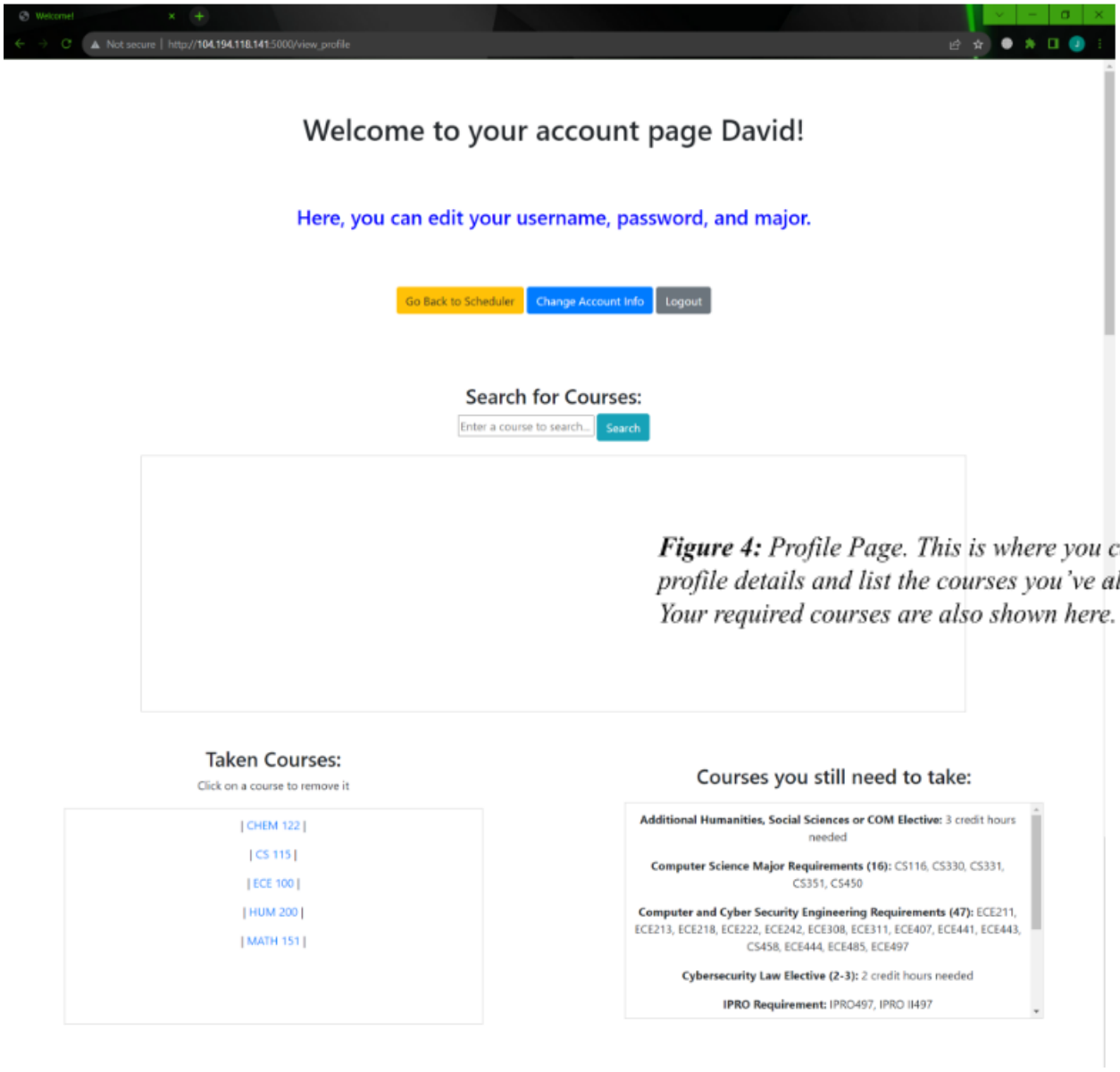


Figure 4: *Profile Page. This is where you can edit your profile details and list the courses you've already taken. Your required courses are also shown here.*

IV. Future of IIT Course Scheduling Application

Though this project is already functioning well beyond our expectations and has impressed both our professor and peers, it still has room for future development and improvement.

As mentioned earlier, this web app only works on undergraduate students who major in Computer Science, Computer Engineering, and Computer and Cybsersecurity Engineering. Therefore, a possible aspect for future development would be to get the application working for all students in IIT, rather than just for students in certain majors.

The recommendation algorithm also needs to be improved a bit more. Right now, it still has its own faults, such as recommending 400-level courses to freshmen and recommending classes with time constraints. However, these errors only happen seldomly as the algorithm works perfectly almost all the time. Nevertheless, it is still important to improve this part of the project, as this is the main highlight of the application.

Another functionality the group would like to develop in the future is Guest accounts. There are a lot of students out there who don't want to make new accounts and such, and only want to use the application only once and never again. So, to make it easier for them and for the server, a good solution would be to implement functionality for Guest accounts using this application. That functionality has already been partially implemented in this project, however it is still not working perfectly and still needs a lot of fixes

Since this web application deals with accounts and back-end functionality, another aspect this project needs improvement on is its overall security. Right now, the only security measures in place are basic user authentication for student accounts as well as password hashing in the database. However, security can still be improved further by implementing authentication tokens and cookies to prevent unauthorized access to certain pages.

Lastly, right now, the server is only being run locally. If this web app were to be scaled up and had to be available 24/7, then running it locally would be inefficient and unsustainable. Therefore, a good solution to this would be to migrate the server to a cloud

database that would run 24/7 with more resources than our own laptops. However, since this web app is not in production yet, the group still continues to run it locally.

V. Appendix

Shared GitHub Repository: https://github.com/LMarcin12/IPRO-497-Group-D

Innovation Day Presentation: https://docs.google.com/presentation/d/1li7P6ZoD60UdoZGz9wJGl5Dz4z_EYpfyYJ8Qa9BVviI/edit?usp=drive_link