URC++

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URL: https://ec2-3-237-37-178.compute-1.amazonaws.com

Abstract:

The URC++ team created a more improved version of the URC project. The website is now much more functional, and contains more realistic data because we implemented web scraping to seed the opportunities with real professors from the University of Utah. This, along with other changes to the UI, greatly improved the look and feel of the project.

We improved the overall security of the website, scanning all uploaded files for viruses and requiring admin authorization for users that register as a professor. One more area we improved is the Opportunity, users are now able to sort and filter the opportunities. Another improvement is users are now able to register with a specific role, pending administrator approval. In addition, users are able to receive notifications about the latest opportunities added, so they can be aware of new opportunities, and student users are able to directly apply to the opportunity and be able to see the current status of their application. Lastly, toasters are employed in various places throughout the app to better indicate successful/errors on user actions.

Introduction

The URC++ team created a more improved version of the URC project. The website is now much more functional, and contains more realistic data because we implemented web scraping to seed the opportunities with real professors from the University of Utah. The overall look and feel of the website has improved significantly with the features our team implemented, and the URC feels like a much more functional project overall.

We improved the overall security of the website, scanning all uploaded files for viruses and requiring admin authorization for users that register as a professor. Another improvement is users are now able to register with a specific role, pending administrator approval. Uploaded files are restricted to certain sizes and input formats, in addition to the virus scanning.

Another feature we added is the notification for students. Every time a new opportunity is created, the students will receive a notification about the opportunity to alert them of it. Every student will receive the notification when an opportunity is created. The student is able to mark the notifications as read individually are all at the same time.

We also added the application status feature to the project. Students are now able to apply to opportunities directly from the opportunity list page. A new page called the application status is where the students can view their application status for each opportunity that they applied to. The professors are also able to see the application for each of their opportunities in a new page. On this page the professor can reject or mark the application as under review. The student will see this change reflected in the application status page.

A smaller feature we added is using toasters in various places throughout the application. These toasters are used to indicate to the user whether the action he/she did was a success or an error. For example, when applying to an opportunity, the user will see the toaster message in the top right with a message similar to “Successfully applied to the Research Opportunity”. This can better inform the user that his/her action actually resulted in something happening, especially when the action keeps them on the same page.

One more area we improved is all of the table views for Opportunities and the three admin tables for Students, Opportunities, and Users/Roles. These tables now are paginated so the views look nice with all of the seeded data. Additionally, these tables offer features so the user can search through the table by certain keywords, or sort the table in ascending/descending order by a given field.

Feature Table

Feature Name	Scope	Primary Programmer	Time Spent	File /Function	LoC
Notifications	Full	Hayden	9hrs	Notifications Model added controller methods html/css	~350
Toasters	Front	Hayden	2hrs	Add various toasters to indicate success/errors of various actions	~120
Application Status	Mostly Front, but some backend	Hayden	9 hrs	Added apply buttons to opportunities for student, Added student application status view Added Professor Opportunity application view	~530

Feature Table (cont.)

Feature Name	Scope	Primary Programmer	Time Spent	File /Function	LoC
Improved Opportunities Table	Full	Dan	6hrs	Added table pagination for the main opportunities view. Added search/sort features for opportunities. Improved overall look and feel of the view.	~400
Improved Admin Views	Full	Dan	5hrs	Added table pagination for the admin users/roles, opportunities, and student views. Added search/sort features for the admin table views. Improved overall look and feel of the view.	~500

Web Scraping/ DB Seeding	Backend	Dan	8 hrs	Used web scraping to seed opp/users DB with UofU CS profs. Seeded Users DB with students, scraping random names, interests, skills. Scraped U prof. pictures and then random tech pictures for generic images	~600
Role Assignment in Registration	Full	Connor	2 Hrs	Allows User to specify which role they would like to register as. Once they have completed the email confirmation they will be able to sign in and access the necessary pages.	~50
Calendar Rss feed and other features to a footer for the home page	Full	Connor	8 hrs	Application now pulls event data from the Computer Science Department Calendar and displays a few of the events dynamically.	~100
Improved security on File uploads	Backend	Connor	10 Hrs	Application now has a greater number of validation checks for uploaded files including	~100

				specified file types and length. Also verifies the request using an authorization token in the cookies. Before saving any files to the file system a third party virus scanner is run to verify no malicious content is being uploaded.	

Individual Contribution Table

Team Member	Time Spent on Proj	Lines of Code Committed
Connor	20	~300
Dan	21 hrs	~1500
Hayden	20 hrs	~1000

Hayden

I added toasters to various places around the application to indicate that various actions were successful or to indicate an error had occurred. I also added notifications feature to the application for the student users of the app. Lastly, I added an application status feature that allows students to apply to opportunities and monitor the status of their application in regards to the opportunity.

Dan

I implemented web scraping to seed the opportunities and users database with more interesting and useful data. The opportunities all correspond to real U CS professors and their research interests and tags are actual data scraped from the U website or google scholar. I also overhauled all of the table views and implemented table pagination along with searching/sorting features so that the opportunities and all of the admin/professor tables are much more nice looking and useful. I also did a couple of hours of troubleshooting with getting selenium running on the AWS instance and dealing with some of the interesting issues that popped up while trying to implement web scraping remotely.

Connor

I added a calendar system to the home page. These events are pulled from the Computer Science Department's calendar. Several of these events are displayed in a list at the bottom of the page. This involved linking the project to the RSS feed for the University's calendar and reading the feed. I also set up a way for users to pick a role when registering, this allows users to start using the site as soon as their email is verified and not have to wait for an administrator to assign them a role. I also increased the security of the file upload system. More validation checks were added including file size and file type. The process also now uses authorization tokens as well as a third party virus scan on file inputs before being saved to the file system to reduce chances of malicious activity.

Performance Level

Overall, we feel the group achieved a good performance level. While there were some features we wish we had the time to implement, the final result definitely achieves significant improvements compared to the original URC project. The functionality of the features we added, combined with the improvements to the overall UI make the website feel much more similar to a modern, professional website.

Summary

URC++ has added improved Opportunity list that allows the user to filter and search through the opportunities as compared to before. Also the Opportunities are based on real world data instead of made up data, which makes the application look more polished and indicative of real world use. We also added toasters to improve user experience to inform users of successful/erroneous actions. Another feature we added is notifications that will inform students when new opportunities become available, so that students don't have to search for the latest opportunity themselves. Additionally we added the application status feature to allow students to apply for opportunities. This feature is helpful because it helps the professor know what students are interested in their research opportunity and what skills they have. It also benefits the student

because they can see their application’s status and when it was updated.