



Capstone Project Selection Secured by AWS

Student: Manuel Muniz

Instructor/Faculty: Dr. Masoud Sadjadi, Florida International University

PROBLEM

Currently, project selection is being hosted on Microsoft SharePoint, where students can manually modify their selection and even other students on the shared excel spreadsheet. This process lacks security features such as MFA and provides limited ability to log changes to the spreadsheet. Current system also depends on multiple sources of information for students to select their projects.

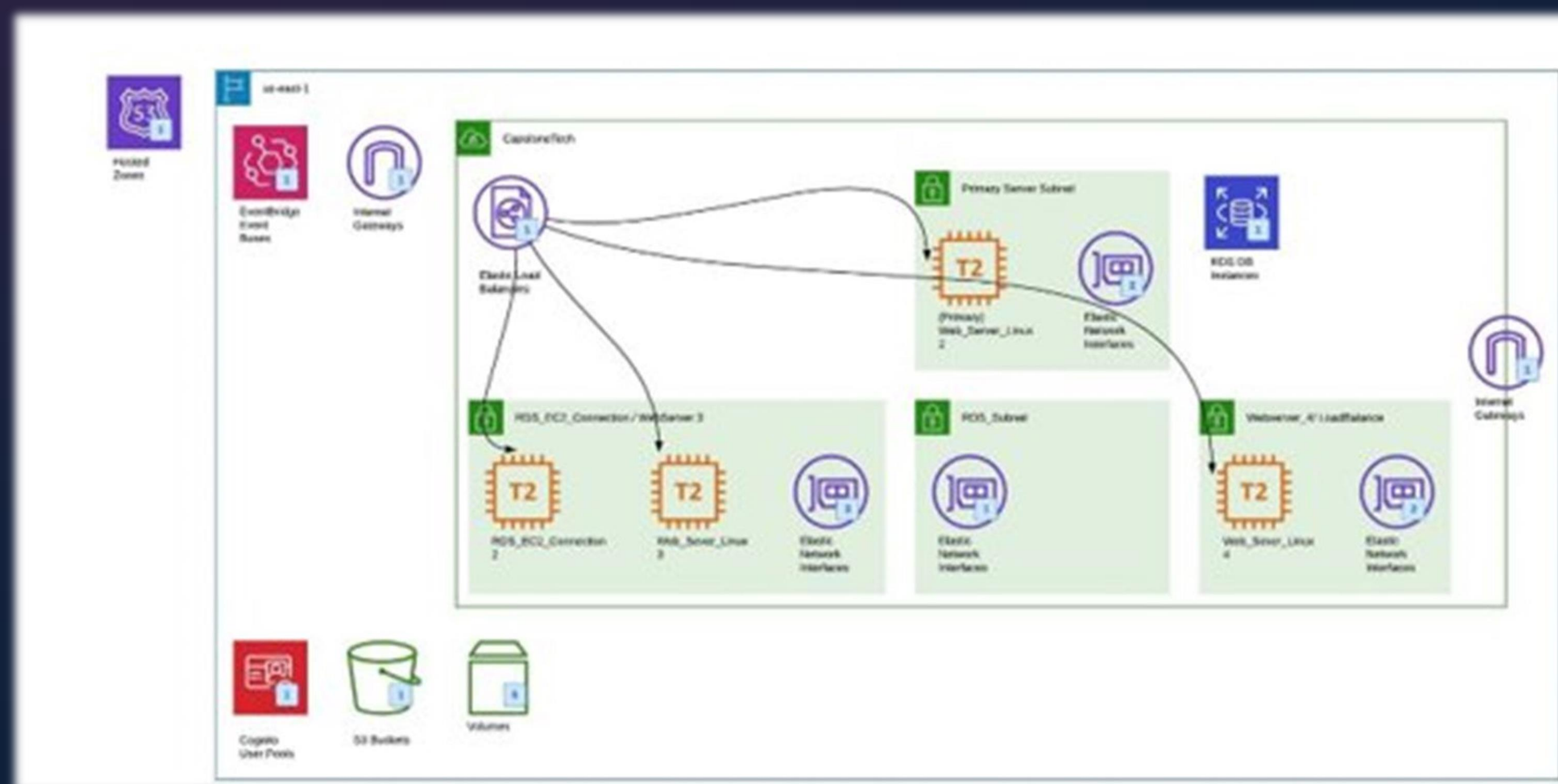
CURRENT SYSTEM

Students are provided a website hosting an array of projects available for the semester, then they are provided a link to a SharePoint spreadsheet where they manually need to assign a project next to their name. The current implementation allows all students in the class to view/edit other students' info, selection, and even the lead members activity reporting throughout the semester. Students have limited ability to identify project availability on the spreadsheet.

REQUIREMENTS

- Control access to project selection
- Project List with description
- User Sign-in and Sign-up ability
- Ability to track and limit changes done by students
- Multi-Factor Authentication

SYSTEM DESIGN

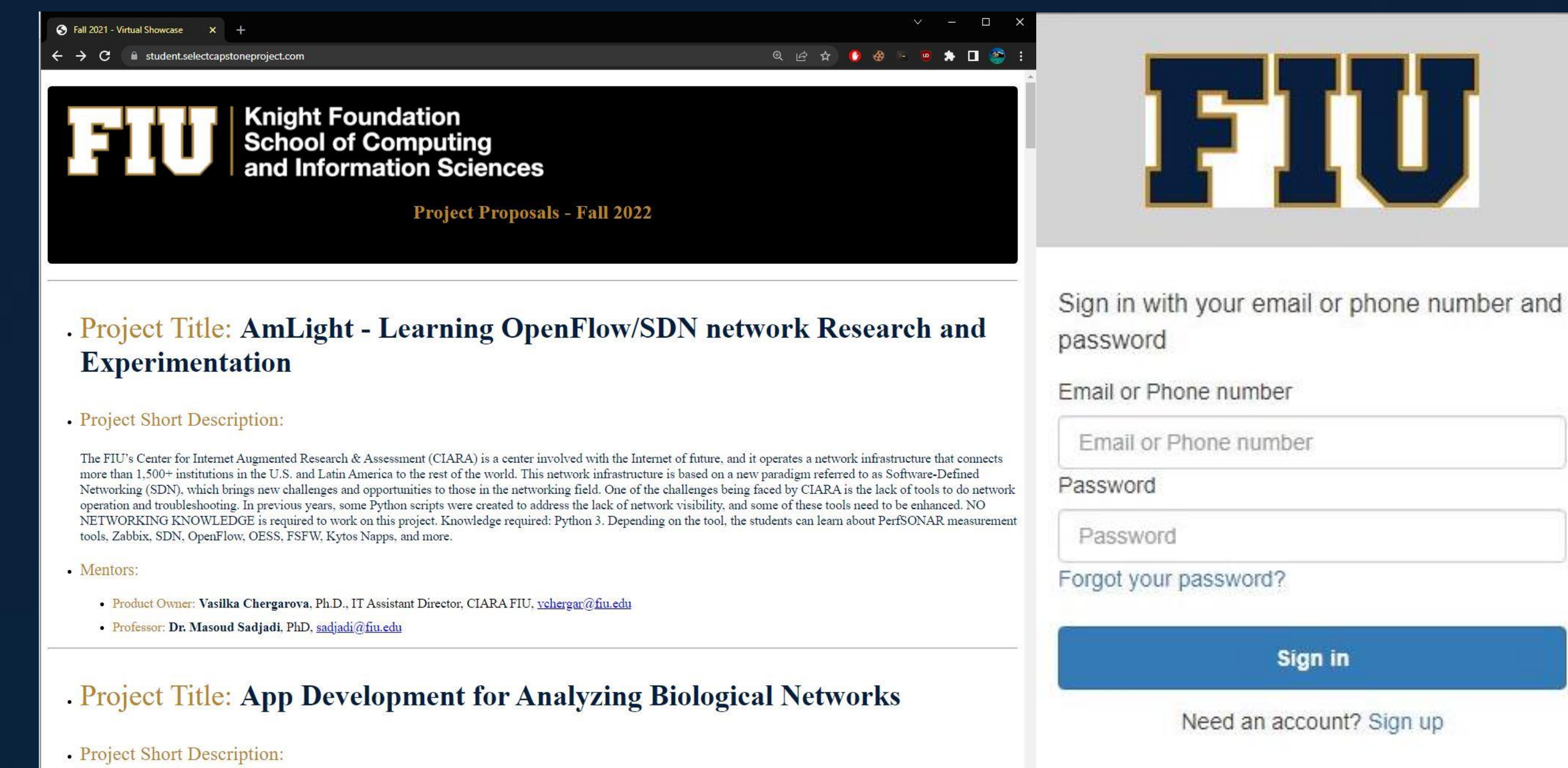


IMPLEMENTATIONS

- Revamp front-end for project list with user-friendly design
- AWS Cognito for user sign-up and sign-in
- Create webserver on EC2 instance to host website
- Enable load balancers for EC2
- Implement autoscaling on EC2 instances
- Establish policies for improved application security and accessibility
- Implement CloudTrail for tracking user activity and auditing purposes.



SCREESHOTS



RISK ANALYSIS

	Negligible	Moderate	Severe
Very Likely	Student signs in using non-FIU account	Students alter other student's information	Student deletes all information on excel
Somewhat Likely	Student signs in using another student's account	Student accesses AWS account that hosts the website and resources	Student emails classmates fake link leading to malicious site
Unlikely	Non-FIU student signs in and alters information	Students to DDOS server	Students access AWS using unsecure ports (80, 443, 3306, 22)

SECURITY RECOMMENDATIONS

- Use AWS Cognito for secure user authentication and authorization to access
- Use AWS Security Groups and Network ACLs to restrict inbound and outbound traffic
- Utilize AWS Key Management Service (KMS) to encrypt sensitive data
- Enable AWS CloudTrail to capture and monitor

SUMMARY

Our projects aims to simplify and remediate security issues with the current project selection process. Users are provided with a front-end where they can learn about the different projects, then jump to selection using secure sign-in/ sign-up options with MFA implementation using smartphone app. We aimed to create a comprehensive, user-friendly environment, that allows for maximum availability and reliability of services using AWS available services.

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ACKNOWLEDGEMENT

The material presented in this poster is based upon the work supported by XXXXX (name of the project sponsor: federal, state or local government, or corporate partners, where applicable). We/I thank XXXX for his/her/their assistance and mentorship that I/we received throughout the senior design project.