Documentation and Educational Website Weekly Report

EE/CprE/SE 492 WEEKLY REPORT 03
3/04/2023 - 3/24/2023
Group number: 31
Client &/Advisor: Dr. Hongwei Zhang

Team Members	***Majors***
Adam Kruger	Software Engineering
Danny Cao	Electrical Engineering
Ethan Gabriel	Electrical Engineering
Zachary Miller	Software Engineering

Sphinx Development
- Adam Kruger
- Zachary Miller

Website Design
- Zachary Miller
- Ethan Gabriel

Willingness to learn about 5th Gen Wireless Networks
- All team members

Tech Writer Skills
- Danny Cao
- Ethan Gabriel

Experiment Design
- Danny Cao

Git
- Zachary Miller

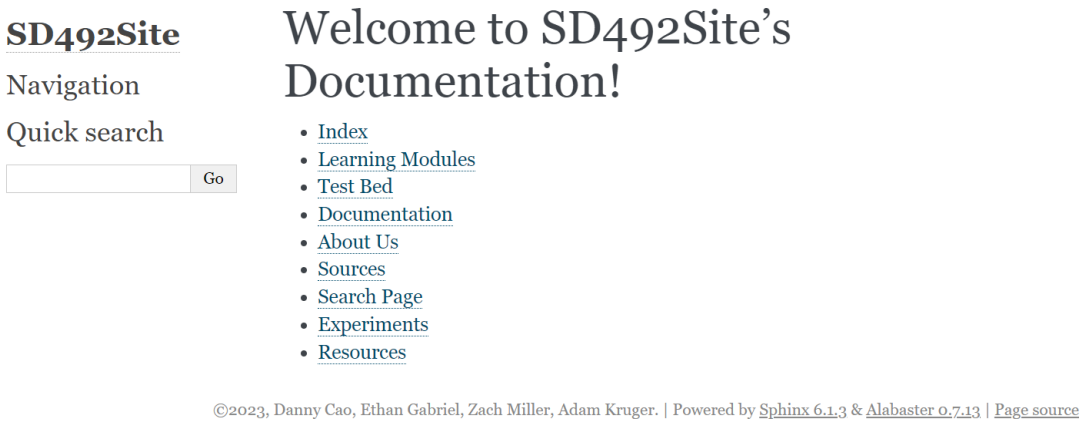
Surveying Experience
- All team members

Weekly Summary:

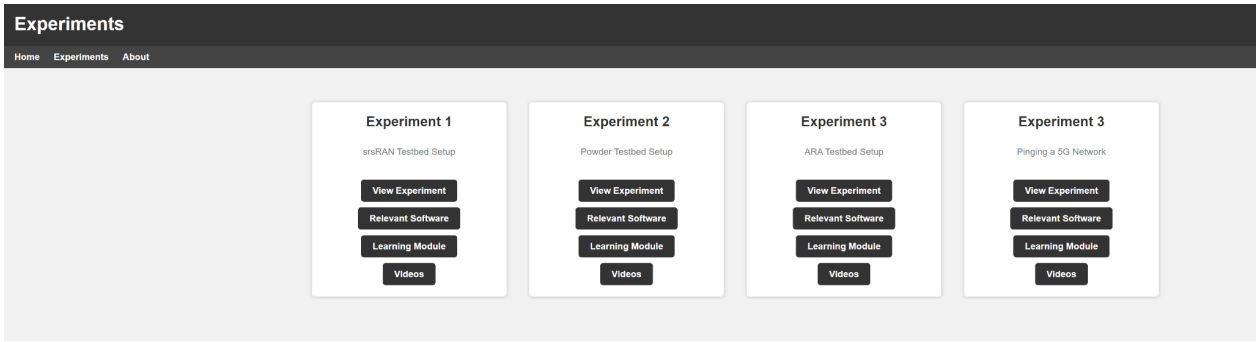
We began implementing navigation on the website and creating modules for learning in these past weeks (including spring break). We have gained extensive knowledge on the syntax and semantics of Sphinx and ReadTheDocs, which we are using to deploy the website. We are almost done with the structure of our website and plan to dive deeper into the content in these coming weeks.

We have made huge strides in the structure of the website, creating tabs and links to information users would be able to access. Currently, we have an About Us tab, a learning module sample, and even an experiment. From this framework, we are confident that the website will have plentiful learning resources, updated documentation of the ARA GitHub, and interactive experiments from both ARA and third party sources that users can use to get real-life hands-on experience.

Currently, we have one experiment that shows how to set up Powder Wireless (https://powderwireless.net/#:~:text=Powder%20(the%20Platform%20for%20Open,the%20future%20of%20wireless%20networks), a platform that allows its users to test a very wide range of experiments regarding wireless networks.



The following are some changes/input made to the framework:



Computer Network Foundation

Introduction

Pinging a network is the act of essentially sending a relatively small packet of information (data) from one device to another. In our case, we'll be pinging from your computer to a 5G network created and initialized on another device created by the Powder web application. Pinging allows us to test the speed, reliability, and overall status of the network connection between the connected devices. It also allows us to:

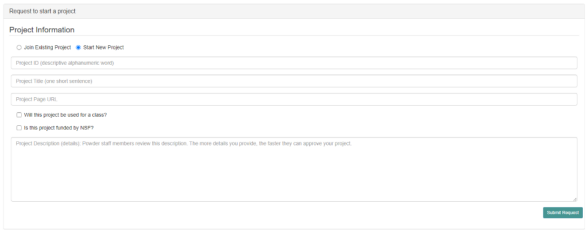
- Troubleshoot Network Problems
- Monitor Network Stability
- Test Network Performance
- Checking Security Breaches
- Verifying Network Configuration

Getting Started

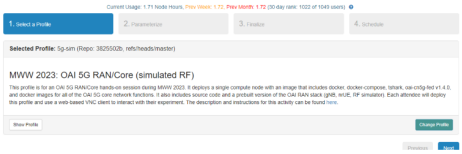
Let's start with our first testbed and experiment as we set up a 5G network simulation on Powder.

Step 1. Launch a web application, go to www.powderwireless.com, and create an account or sign on.

Step 2. Under your username, click on the "Start/Join Project" tab. If this is your first time launching Powder, you'll be required to start a new project and will most likely have to wait for a confirmation of your project once the information has been submitted. Otherwise, join an existing project and continue on.



Step 3. After starting/joining a project, in the top left, click on the tab under "Experiments" and "Start an Experiment." From here, we'll want to simulate a 5G network, so select the profile "5g-sim". You can use the search function to locate the specific profile.



Introduction

- Now must add experiments and documentation from the official ARA website

Module Links

- We are now going to be adding more stuff from the ARA official site onto the modules, testbeds, and experiments sections of the documentation website

Test Bed

- More relevant ARA features will be implemented within Test Bed as an ISU associated 5G application. We can implement this using some resources from the ARA site.

Contact Us

- No changes made to original plan

How to Get Started

- Inclusion of O-RAN application, inclusion of ARA-RAN, PowderWireless
- ARA will be active within the following weeks, software and application guide will be provided to support this.

Reference sources

- References tab has been implemented and will be updated

Past Week Accomplishments:

- Zach Miller: Worked on all website layout, added all existing website content, both for actual content involving experiments, learning modules, quizzes, and testing
- Danny Cao: Sorted through resources to determine what to put in experiment modules. Created experiments content
- Adam Kruger: Worked on website layout and configured navigation.
- Ethan Gabriel:Continued research regarding 5G technologies to help improve the future amount of content on site.

Pending Issues:

- Zach Miller: No current issues regarding adding content, this has been sorted out. The only existing issues are related to what content to pull from ARA site
- Danny Cao: Powder application and testbeds have expired and setting up another test bed will only last for a week at most. Will have to re-evaluate the use of Powder.

- Adam Kruger:
- Ethan Gabriel: Content appears to be approved by the advisor but should likely work with him to determine the amount of content desired in each module. Need to determine sample size of students.

Individual Contributions:

NAME	Individual Contributions *(Quick list of contributions. This should be short.)*	Hours this week:	Hours cumulative
Zach Miller	Continued working on website And layout Added content to experiments Added test layout to learning modules And other sections	6	19
Adam Kruger	Coded the framework for the navigation Wrote into the learning modules Configured the links	6	19
Danny Cao	Decided upon which experiments and testbeds to use with documentation. Created experiments	6	19
Ethan Gabriel	Continued Research on 5G tech to improve site content	4	13

Plans for Upcoming Week:

- Finish populating website content including learning modules
    - Adam Kruger and Zach Miller
- Have some members run through ARA experiments and decide what to put in the documentation.
    - Danny Cao
- Being to discuss and populate learning modules with advisor/client present
    - Danny Cao and Adam Kruger and Zach Miller
- Look to utilizing readthedocs.org for creating and hosting documentation material
    - Danny Cao and Adam Kruger and Zach Miller

Summary of Weekly Advisor Meeting:

The weekly advisor meeting this week consisted of discussing our finalized framework with our advisor/client, as well as the introduction to the ARA experiments page and website. When looking at the base framework laid out, changes were made as per the client's request to implement recent additions and experiments from ARA themselves. We also need to continue looking at ReadTheDocs and publishing our documentation there. We still need to look into more test bed applications and software that will need to be utilized via the official ARA network, as it is now active and is an ISU-affiliated tool.

From the advisor's viewpoint, the suggestions for our project included the ARA implementations, as well as quickly developing a clear map as to what will be implemented from both the ARA website and third-party sources. Our advisor said that our content and CSS organization looked good and we could continue with the format that we currently have. The team will be looking into ARA software and content to officially update the website before the next weekly report. We also must utilize ReadTheDocs, O-RAN, and srsRAN documentation. We as a team also decided to prioritize not the general undergraduate population but rather incoming undergraduates who will be working closely with the official ARA project before shifting our focus to the general undergrad population.