EE/CprE/SE 492 WEEKLY REPORT 2

2/8/2021– 2/22/2021

Group number: 26

Project title: Automated Configuration Testing Framework for KBase

Client &/Advisor: Myra Cohen

Team Members/Role:

Daulton Leach: Scrum master / Developer

Hunter Hall: Development

Sergey Gernega: Development

Caleb Meyer: Development

Jake Veatch: Development

Daniel Way: Development

- **Weekly Summary**

This week, we worked to diagnose and resolve a bug introduced from changes in the KBase user interface. This bug was a blocker for most of our work as it prevented us from interacting with KBase narratives. We continued implementation of our narrative inputs for the Flux Balance Analysis, multi-value fields, and field randomization. We also began Dockerizing our application to support and test across multiple platforms.

- **Past week accomplishments**

• Daniel Way: Began work on asynchronous job activity updates from the job runners back to the user's graphical interface to provide indication of progress for queued jobs.

· Jake Veatch: Attempting to run the application in a Docker container in a fully automated manner. Able to pull in work from the previous week being able to run jobs from a configuration file in a headless manner without a visible GUI for the user. This enabled the use of a Docker image, taking in a path to configuration files to be run.

· Hunter Hall: Creating a new user variable for the custom flux bounds variable and also

adding restrictions/limits on the custom flux bounds variable.

· Sergey Gernega: Implemented the ability to enter multiple parameters to gene knockouts instead of previously having one. Before the params get imputed, the text fields are fully cleared out from previous FBA runs and the parameters are fed into selenium. Refactored code, updated checkstyles, and investigated bugs.

· Caleb Meyer: Investigated issue that was causing automation to fail. Kbase had gone through an update that made it so that our old system failed. The results of the investigation were that the failure was on Kbase and it was not the fault of our automation process. However, as a side result the narrative identifier was updated to a String from an Int in order to future proof the system for any future update Kbase may go through.

· Daulton Leach: Implemented a new feature that allows the user to select which fields they want to fill in and randomizes the rest. Prior to this the other fields would be set to their default values, but now we can test them a bit more by running multiple jobs (in the future) with some variables constant and other random. Tested this new feature and merged it. Did some minor code refactoring in the main GUI class. Began researching random sampling and began to think about how we can implement this in our project.

- **Pending issues**

The team ran into an unexpected issue that caused development to be slowed significantly. It seems that KBase had a minor UI change which resulted in Selenium getting hung up at certain times during execution of our program. This issue slowed down development of new features and delayed testing as we could not consistently get clean runs of the program. This issue has since been patched and hopefully will not persist in the future.

· Daniel Way: Determining how to display large volumes of jobs (and statuses) with the meaningful differences between them in a user-friendly way.

· Jake Veatch: Hard time automating a Docker file that can stand up a container that has Selenium pre-installed. Looks like Selenium offers a Docker image that can be subclassed into custom containers.

· Hunter Hall: Had some difficulties determining the limitation of variables due to lack of KBase documentation.

· Sergey Gernega: Investigate KBase's changes that cause automation to fail. Do more testing on text area clearing out before feeding in params through our GUI to selenium to KBase.

· Caleb Meyer: Determining CSS selectors for the remaining variables.

· Daulton Leach: Determining how we are going to implement random sampling. Deciding from a UI perspective how we are going to combine some aspects of our application. Understanding what random sampling is fully and how to implement it in terms of our project.

- **Individual contributions**

NAME	Individual Contributions	Hours this week	HOURS cumulative

Daniel Way	Began work on job queue update display	14	22
Jake Veatch	Working on creating Docker containers to run the program in an automated fashion.	12	19
Hunter Hall	Creating new user variable with limits	12	19
Sergey Gernega	Worked on implementing a feature that allows users to input multiple geneKnockout	14	22
Caleb Meyer	Investigation of Kbase error	14	21
Daulton Leach	Implemented a new feature where the user can select which variables to input while randomizing the others, Testing new features, Minor Refactoring of the GUI class.	14	22

- **Plans for the upcoming week**

  • Daniel Way: Complete the basic job queue status display. Validate with concurrent processing.

  · Jake Veatch: Complete Docker container and be able to run the program from a Docker container.

  · Hunter Hall: Continue working on input variables and the limits/restrictions that need to be applied for each variable

  · Sergey Gernega: Work on refactoring programInputs(Job job, WebElement scopedFBACard) method which is a really long method. My plan is to factor out duplicate code into different methods to make it more modular.

  · Caleb Meyer: Implement more of the remaining variables. Potential refactoring of automation method.

  · Daulton Leach: Continue refactoring the GUI class to make it reusable for other functions of the project. Start working on running multiple jobs concurrently from a GUI perspective. Learn more about sampling. Start working on pulling the GUI validation methods out of the main GUI class for the ability to be reused.

- **Summary of weekly advisor meeting**

This week we had our first sprint come to an end and we demonstrated our progress to our advisor. We discussed the new features that were implemented this sprint and talked about future sprints. We talked about the ability to read from a file into our GUI to run jobs concurrently and the time frame for when we could implement this. Running multiple jobs will be a big focus for the coming weeks. We also discussed planning a meeting with a couple of KBase employees to get their takes on our project and to demonstrate our progress. This will bring on some new requirements at the request of these users.