

COSC 594 Final Project: Update #2

Chris Cotter, David Dooley, McKensie Nelms, Michael Wermert

Project Organization:

In our last meeting we discussed different responsibilities of each team member. The breakdown is as follows:

- Chris: Integration of Mash and/or Dashing executables into program, distance score cutoff determination for filtering off-target sequences
- David: GUI development, index building (for off-target algorithm)
- McKensie: input/output of gRNA data and off-target analysis and output parsing
- Michael: gRNA plotting and data visualization

We created a Gantt chart with proposed objectives and estimated completion dates (Figure 1).

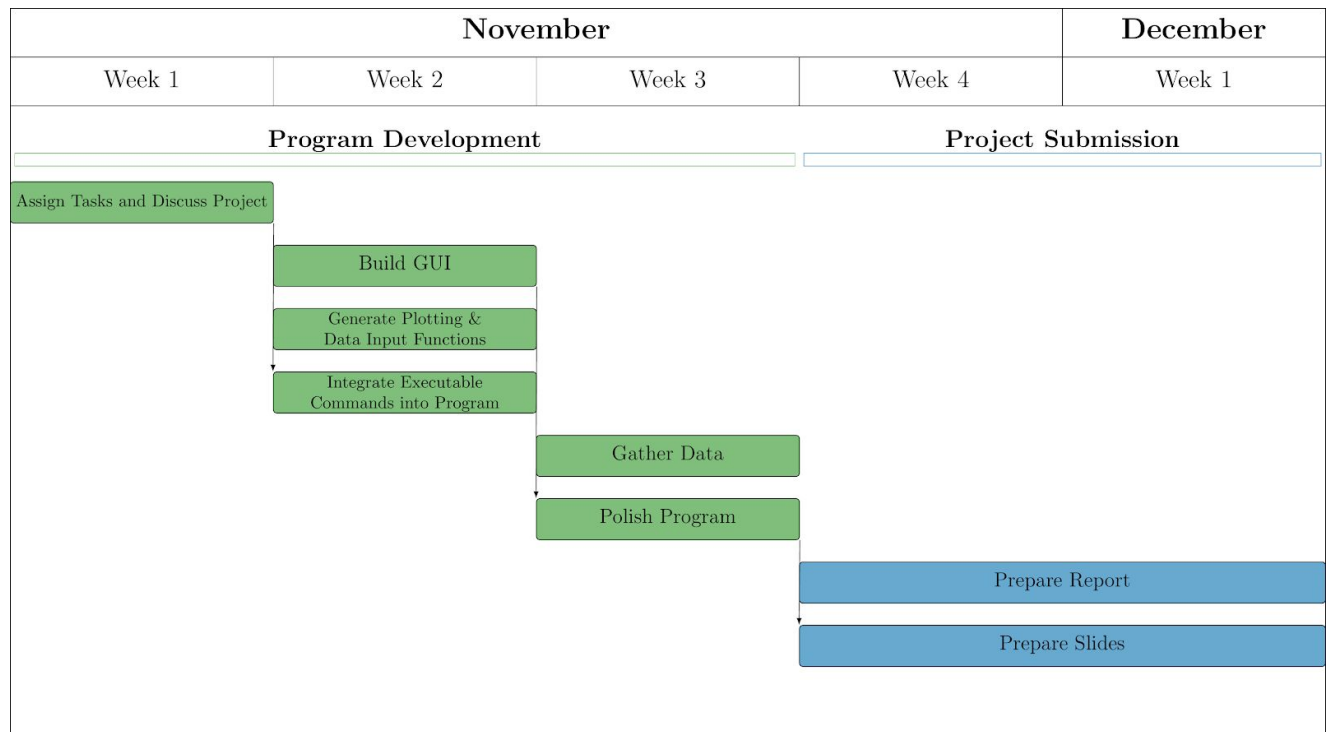


Figure 1: Gantt chart for COSC 594 Project.

A workflow diagram that details the basics of the project was also created (Figure 2).

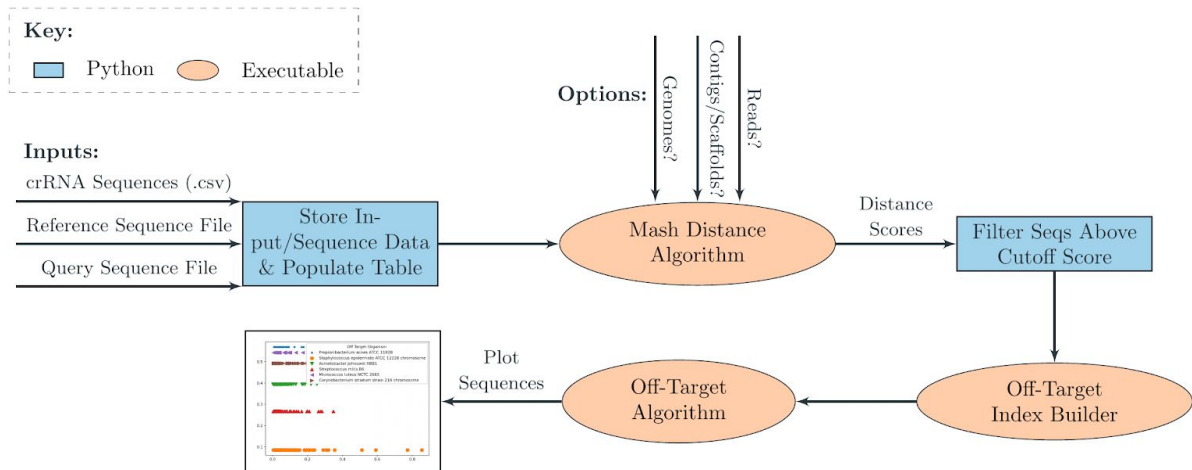


Figure 2: Workflow diagram for COSC 594 Project.

A preliminary GUI was made (subject to change) using PyQt5 and Qt Designer, and data import functions were connected to appropriate “Browse” buttons. A screenshot of the GUI has been included below (Figure 3).

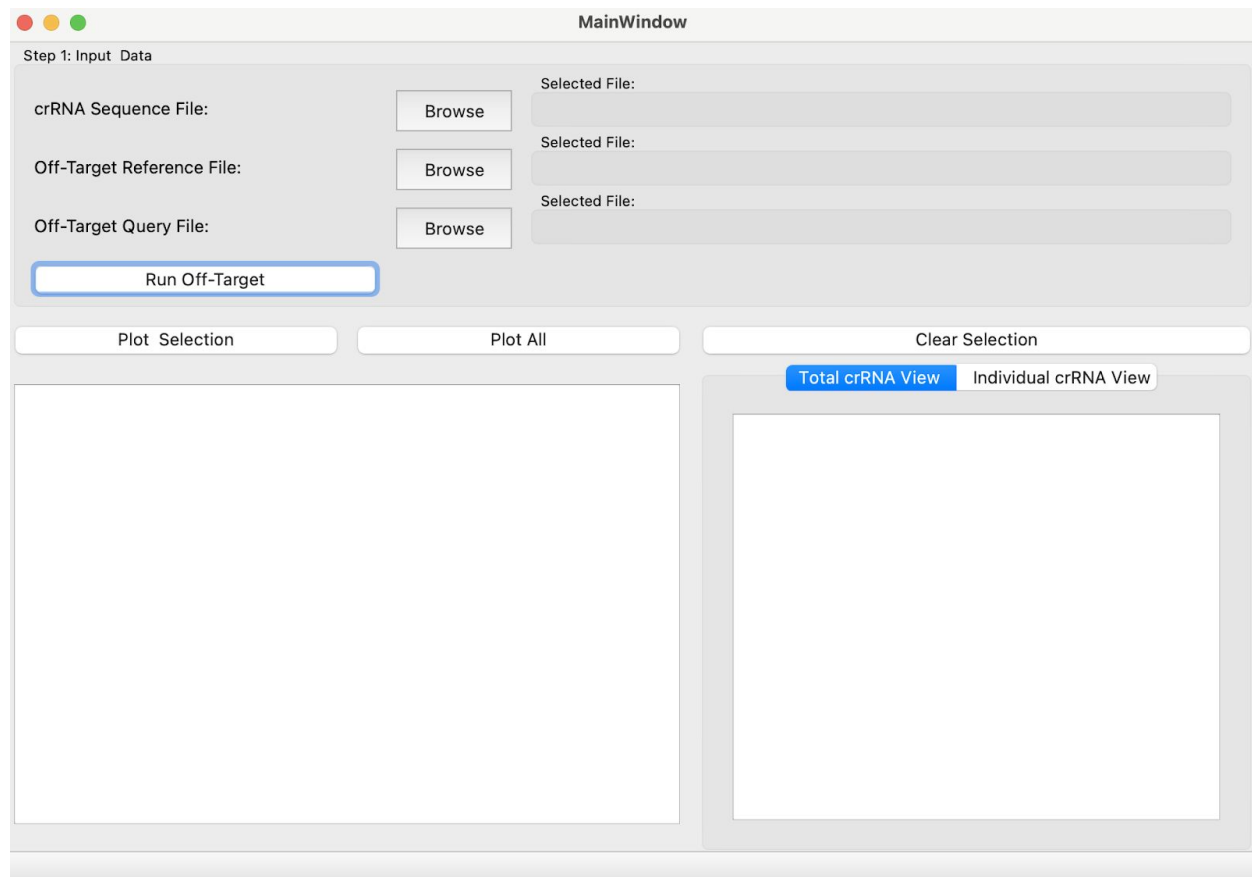


Figure 3: Screenshot of GUI for crRNA off-target analyzer program. Bottom left widget will contain a table with crRNA sequences and cognate data. Right widget will have two tabs for different visualizations of off-target + Mash distance filtered crRNA sequences.

Python programs were written in order to show the Off-target score vs the Organism Distance for several gRNA strands (Figure 4) and are ready for integration into the GUI once upstream processes have been integrated. All in all, the project is on track for the expected completion date.

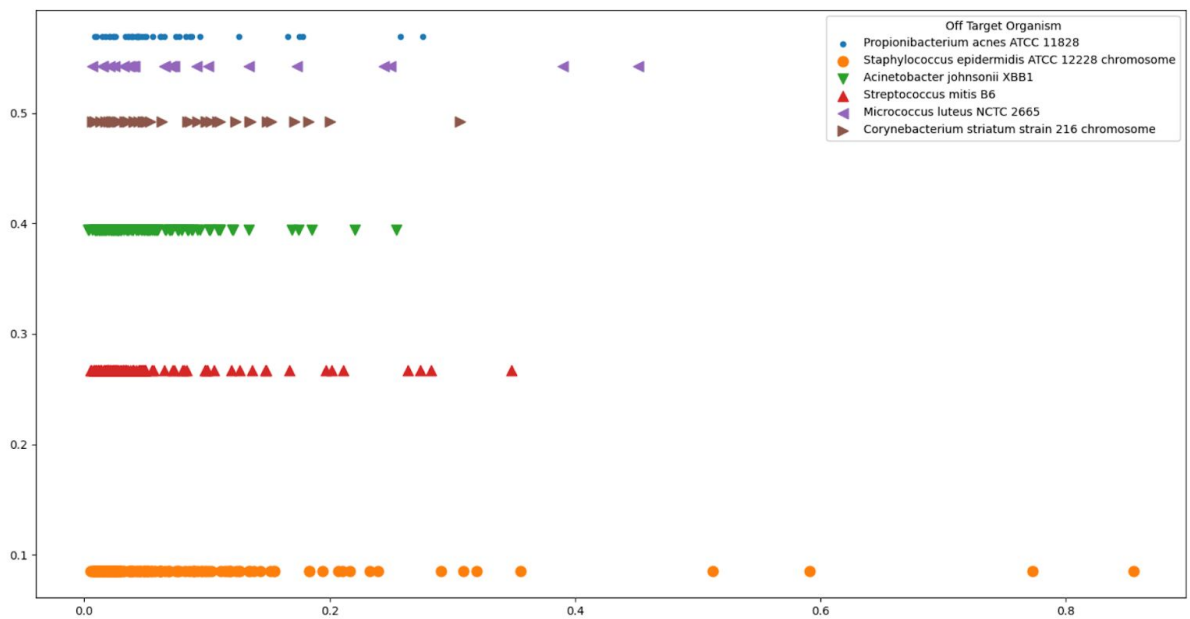


Figure 4: Plot of off-target scores vs organism distance for several different *S. aureus*-targeting gRNA strands in several different organisms.