Final Project

The website aims to introduce machine learning clustering algorithms to non-programmers and people with little background in machine learning. This website conveys how k-means and agglomerative algorithms appear visually in a 2-D dataset at different epochs till convergence. Visually, the user should get an understanding of how results differ between different clustering algorithms. It aims to be interesting by allowing the user to control the process of the algorithms such as choosing a dataset, generating a dataset and stepping through epochs. This is largely aimed at people new to clustering algorithms who do not know or want to code.

As the user selects “Choose Algorithms” on the top navbar, the user gets to choose the algorithms on the second level navbar.

- Click on “Change Dataset” on the third navbar if the user wants to change dataset and choose preferred dataset
- Click on “Data Generation/Restart”, if dataset is random or dataset 2, the data displayed on the left should shift
- For K-means, click on “Centroid Generation”, two crosses should appear on the left and click on “Next Epoch”, visualization should change
- For Agglomerative, click on “Next 10 Epochs” or “Skip to Convergence”
- Upon reaching convergence, convergence message appears, and results will be displayed.

I used plotly.js to display and make changes to the visualizations. I chose it because it allows updates on the plots as the centroids’ coordinates and data points’ colors change. It adds dynamic plot visualization changes.

I added instructions and error messages to ensure the user is able to recognize mistakes and recover while stepping through the algorithm.

One challenge I faced was ensuring that the user is able to recover from mistakes and I solved it by adding messages if the user clicks on a wrong button.