Checkpoint 2

* Dataset: I am using a csv dataset of approximately 300 instances with 13 features that represent diagnostics that can be used to predict heart failure, which includes Age, Sex, exercise induced angina, number of major vessels (0-3), Chest Pain type resting blood pressure (in mm Hg), cholesterol in mg/dl, fasting blood sugar > 120 mg/dl (1 = true; 0 = false), resting electrocardiographic results, maximum heart rate achieved [Heart Attack Analysis & Prediction Dataset (kaggle.com)](https://www.kaggle.com/datasets/rashikrahmanpritom/heart-attack-analysis-prediction-dataset/data)
* I have a functioning SNN, however it’s accuracy is much worse. I have increased the timesteps significantly, to 10000. However, that only raises its accuracy to about 60% compared to almost 90%. It is a rate encoding SNN. The neuron layout is the same as the DNN: 4 128-neuron Dense layers, a .3% dropout layer, 4 64-neuron Dense layers, and a 2-neuron Dense layer with the sigmoid activation.
* I had a lot of issues getting the data ready for nengo, as depending on the order of my steps, certain things were not turning into numpy arrays like I thought they had from my DNN, so I eventually figured out I had to adjust my code to re-initialize the data every time so that I could run it and adjust timesteps as necessary. I also removed standardScaler from the initialization because I was worried it was making the neurons not hit their intercepts or just not high enough for their input to really make a difference.
* I have tried manipulating the timesteps and the minibatch size but have not had significant success with either. I have increased the timesteps to try to give the model more of a chance to converge. I have tried both increasing the minibatch size as high as my test data numbers will allow me and lowered the minibatch size to as low as 10 since the dataset is so much smaller than the MNIST example, since I didn’t want the model to over generalize using the higher end. The most consistent batch size I found was 20.
* I am looking to see if there are higher instance datasets that I could quickly use to test my model and get better accuracy if there is more data to train on.