**Bio 4990/6990: Computational Activity—Neural Networks**

1. Describe the model we are fitting in this activity:
   1. Goal:
   2. Features:
   3. Response:
   4. Algorithm:
2. Changing the number of hidden layers:

1 hidden layer with 30 neurons

2 hidden layers with 30 and 20 neurons, respectively

3 hidden layers with 30, 20, and 10 neurons, respectively

* 1. How does changing the number of hidden layers impact training and testing accuracy, and why do you think this happens?

1. Changing the number of neurons.

Use the model with a single hidden layer.

Try using 10, 20, or 30 neurons.

* 1. How does changing the number of neurons impact training and testing accuracy, and why do you think this happens?

1. Change the activation functions.

Use the model with a single hidden layer with 30 neurons.

Try changing the activation function of the hidden layer to **sigmoid** and **softmax.**

* 1. Which activation function (ReLU, sigmoid, or softmax) performs best for this task?

1. Select the model you think is the best. You may consider only the models you created to answer the above questions, or explore other changes to the model.
   1. Diagram or describe your model. Include information on the number of hidden layers, the number of neurons in each hidden layer, and the activation functions used.
   2. How many parameters does your model have?
   3. Report the accuracy of your model on the training, testing, and validation data for each class.