

Lesson 18 (Neural Network Playground–2)

Over-Fitting Using Neural Networks: In this lesson we see what happens when a neural network is used to commit the cardinal sin of machine learning—over-fitting.

1. Go to playground.tensorflow.org and set-up configuration 2 shown in the table below.

configuration	1	2	3	4
data	2-cluster	2-cluster		
train-test split	50%	50%		
noise	0	50		
batch size	10	30		
features	x_1, x_2	x_1, x_2		
hidden layers	0	max		
nodes	0	max		
learning rate	0.03	0.03		
activation function	linear	ReLU		
regularization	none	none		
regularization rate	0	0		
problem type	classification	classification		
discretize output	yes	yes		

2. Click the **REGENERATE** button in the bottom left corner to generate a new data set. Then begin training the network by clicking the play button in the upper left corner.
 - (a) What is the final training error?
 - (b) What is the final testing error?
3. Check the box **Show test data** at the lower right and use what you see to explain why the final test error is larger than the final training error.
4. Click the rewinded button to reset the neural network. Repeat parts 2 and 3 with noise set to 0. What is different?
