**Unit 7 - Tensorflow visualizations**

**Terminology, good to know:**A **hidden layer** in a neural network, positioned **between the input and output layers,** processes data using weights, biases, and activation functions to learn patterns and relationships. Its "hidden" name reflects its internal role - hidden from external input/output. Hidden layers are essential for enabling neural networks to perform complex tasks like image recognition and natural language processing, examples **deep learning** applications.

**First Chosen Parameters:** Classification, simple binary gaussian data (visual), 2 features, 2 neurons (hidden layers)

Activation 
DATA 
Which dataset do 
you want to use? 
Ratio of training to 
test data: 50% 
Noise: 
Epoch 
000,206 
FEATURES 
Which properties 
do you want to 
feed in? 
sin(X1) 
sin(X2) 
Learning rate 
0.03 
1 neuron 
This is the output 
from one neuron. 
Hover to see it 
larger. 
Regularization 
None 
Tanh 
2 
HIDDEN LAYERS 
1 neuron 
The outputs are 
mixed with varying 
weights, shown 
by the thickness 
of the lines. 
Batch size: 
10 
Regularization rate 
OUTPUT 
Test loss 0.000 
Training loss 0.000 
0) 
Colors shows 
data, neuron and 
weight values. 
Show test data 
Problem type 
Classification 
Discretize output 
6 
5 
4 
3 
2 
-2 
-3 
-4 
-5 
-6 
REGENERATE 

Difference to above = 4 features and 2 hidden layers instead of 2.

Learning rate 
0.03 
DATA 
Which dataset do 
you want to use? 
Ratio of training to 
test data: 50% 
Noise: 
Epoch 
000,215 
FEATURES 
Which properties 
do you want to 
feed in? 
sin(X1) 
sin(X2) 
Activation 
Regularization 
None 
Tanh 
1 
HIDDEN LAYER 
1 neuron 
This is the output 
from one neuron. 
Hover to see it 
larger. 
Batch size: 
10 
Regularization rate 
OUTPUT 
Test loss 0.000 
Training loss 0.000 
0) 
Colors shows 
data, neuron and 
weight values. 
Show test data 
Problem type 
Classification 
Discretize output 
6 
5 
4 
3 
2 
-2 
-3 
-4 
-5 
-6 
REGENERATE 

 Difference to above = 4 hidden layers instead of 1.

Learning rate 
0.03 
HIDDEN LAYERS 
DATA 
Which dataset 
do you want to 
u Ser? 
Ratio of training 
Epoch 
000,226 
FEATURES 
Which 
properties do 
you want to 
feed in? 
Activation 
Tanh 
Regularization 
None 
Regularization rate 
4 
2 neurons 
1 neuron 
The outputs are 
mixed with varying 
weights, shown 
by the thickness 
of the lines. 
2 neurons 
2 neurons 
to test 
data: 50% 
Noise: 0 
Batch size: 
This is the output 
from one neuron. 
Hover to see it 
larger. 
OUTPUT 
Test loss 0.000 
Training loss 0.000 
0) 
Colors shows 
data, neuron and 
weight values. 
Show test data 
Problem type 
Classification 
6 
5 
4 
3 
2 
-2 
-3 
-4 
-5 
-6 
10 
REGENERATE 
sin(X1) 
sin(X2) 
Discretize output 

Difference to above = 2 features instead of 4.

Learning rate 
0.03 
DATA 
Which dataset 
do you want to 
u Ser? 
Ratio of training 
to test 
data: 50% 
Noise: 
Epoch 
000, 174 
FEATURES 
Which 
properties do 
you want to 
feed in? 
sin(X1) 
sin(X2) 
Activation 
Tanh 
Regularization 
None 
Regularization rate 
4 
HIDDEN LAYERS 
2 neurons 
1 neuron 
o 
The outputs are 
mixed with varying 
weights, shown 
by the thickness 
of the lines. 
2 neurons 
o 
2 neurons 
o 
o 
o 
This is the output 
from one neuron. 
Hover to see it 
larger. 
OUTPUT 
Test loss 0.000 
Training loss 0.000 
0) 
Colors shows 
data, neuron and 
weight values. 
Show test data 
Problem type 
Classification 
6 
5 
4 
3 
2 
-2 
-3 
-4 
-5 
-6 
Batch size: 
10 
REGENERATE 
Discretize output 

**Source**

TensorFlow. (n.d.). *Neural Network Playground.* Available at: https://playground.tensorflow.org/ [Accessed 12 November 2025].