# Artificial Neural Networks

### Important Definitions

* Batch
  + The number of training examples in one forward/backward pass. The higher the batch size, the more memory space you'll need.
* Epoch
  + one forward pass and one backward pass of all the training examples
* Iteration
  + each pass using [batch size] number of examples (pass = one forward pass and one backward pass

### Reinforcement Learning vs Batch Learning

* Reinforcement Learning
  + After each iteration, the weights will be adjusted
* Batch Learning
  + After each batch, the weights will be adjusted

### https://upload.wikimedia.org/wikipedia/commons/thumb/4/46/Colored_neural_network.svg/296px-Colored_neural_network.svg.pngStructure (ANN with one hidden layer)

**Ŷ**

Training Data

### Training

* Input your training data, set the weights near to 0 and calculate the output data Ŷ. Compare Ŷ with the original result and define a cost function C
* Target is to minimize the cost and find the global minimum of C
* For that, adjust the weights after each iteration or batch.
* after all training data was put in the ANN, redo this epoch until C is near to 0