# Introduction

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## Neural Network

- A neuron implements an activation function
- ReLU function → rectified linear unit (take max with 0) often used
- Stack neurons together to create network of multiple input features
- Provide input and output only (supervised learning)

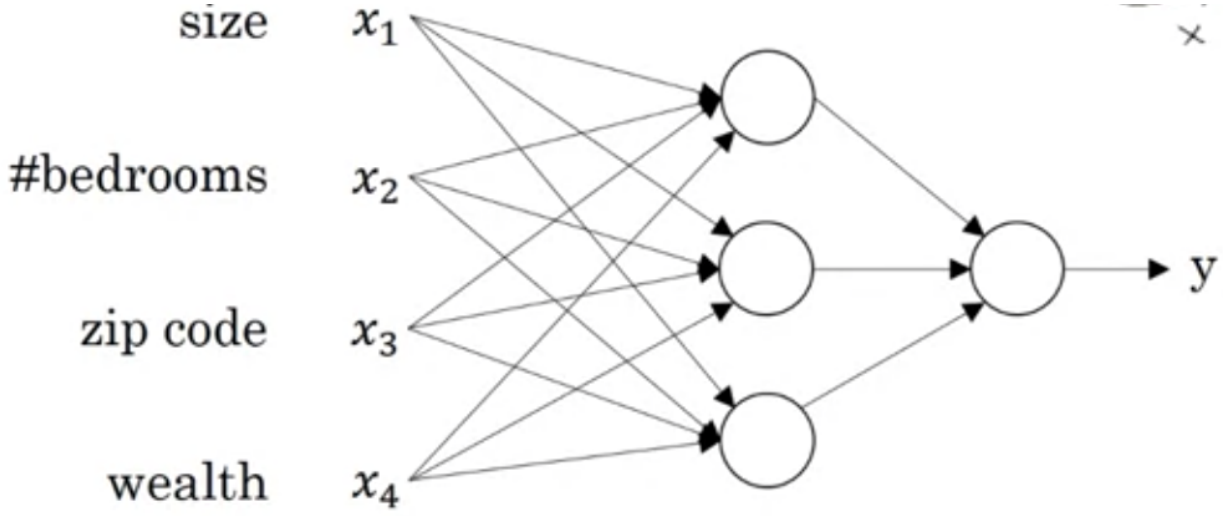


Figure 1: Example NN

- Given enough training data, very accurate in mapping an input to an output

## Supervised learning with neural networks

- Structured data → databases of data with organization
- Unstructured data → data is not well-defined (e.g. images, audio, text)

## Deep learning progress

- Neural network progress always increases with scale of data whereas traditional algorithms plateau, esp. with **large** NNs
- Scale drives deep learning progress
- $m$ denotes training set size

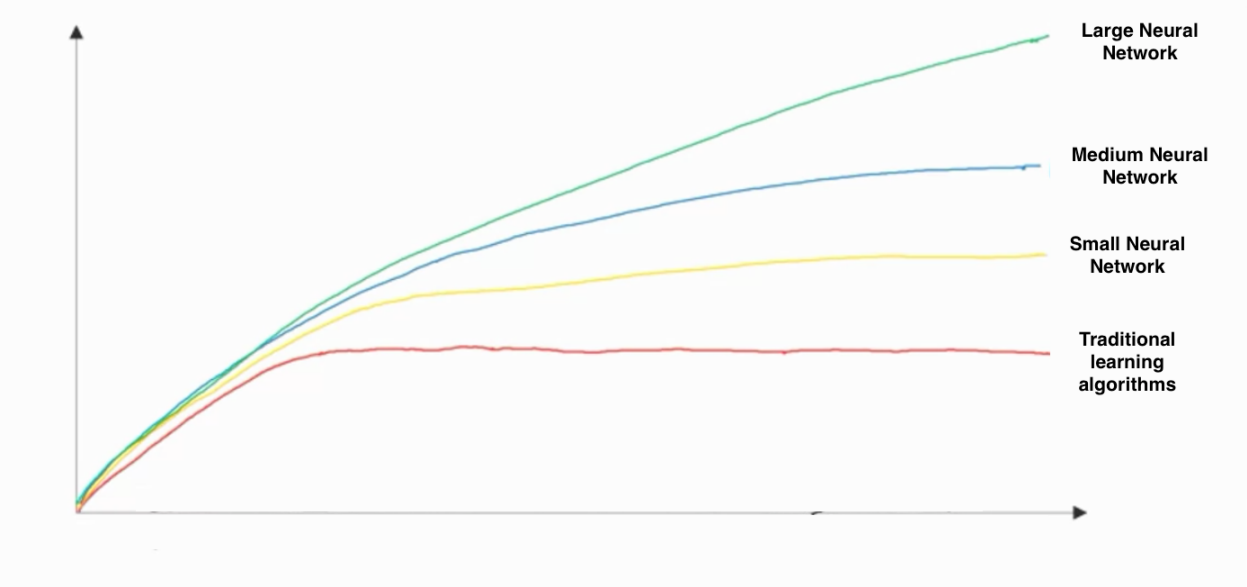


Figure 2: Scale

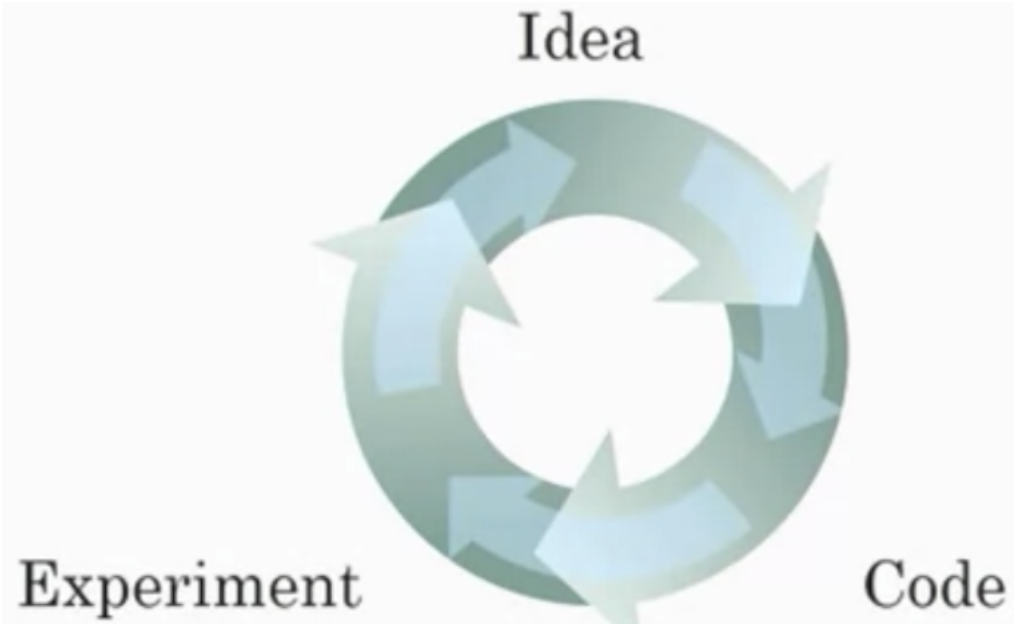


Figure 3: Deep learning cycle