

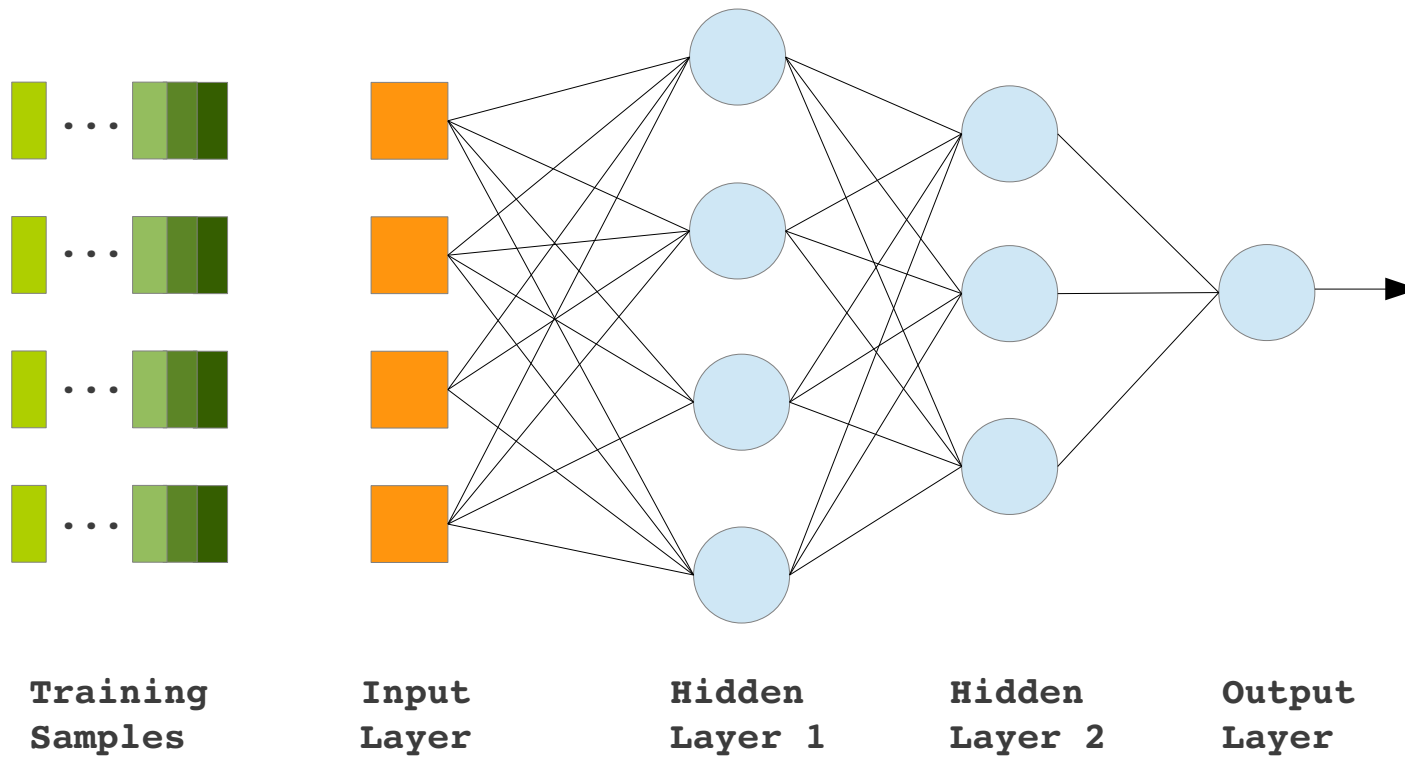
# Dropout

*Presented by Subhodeep Moitra*

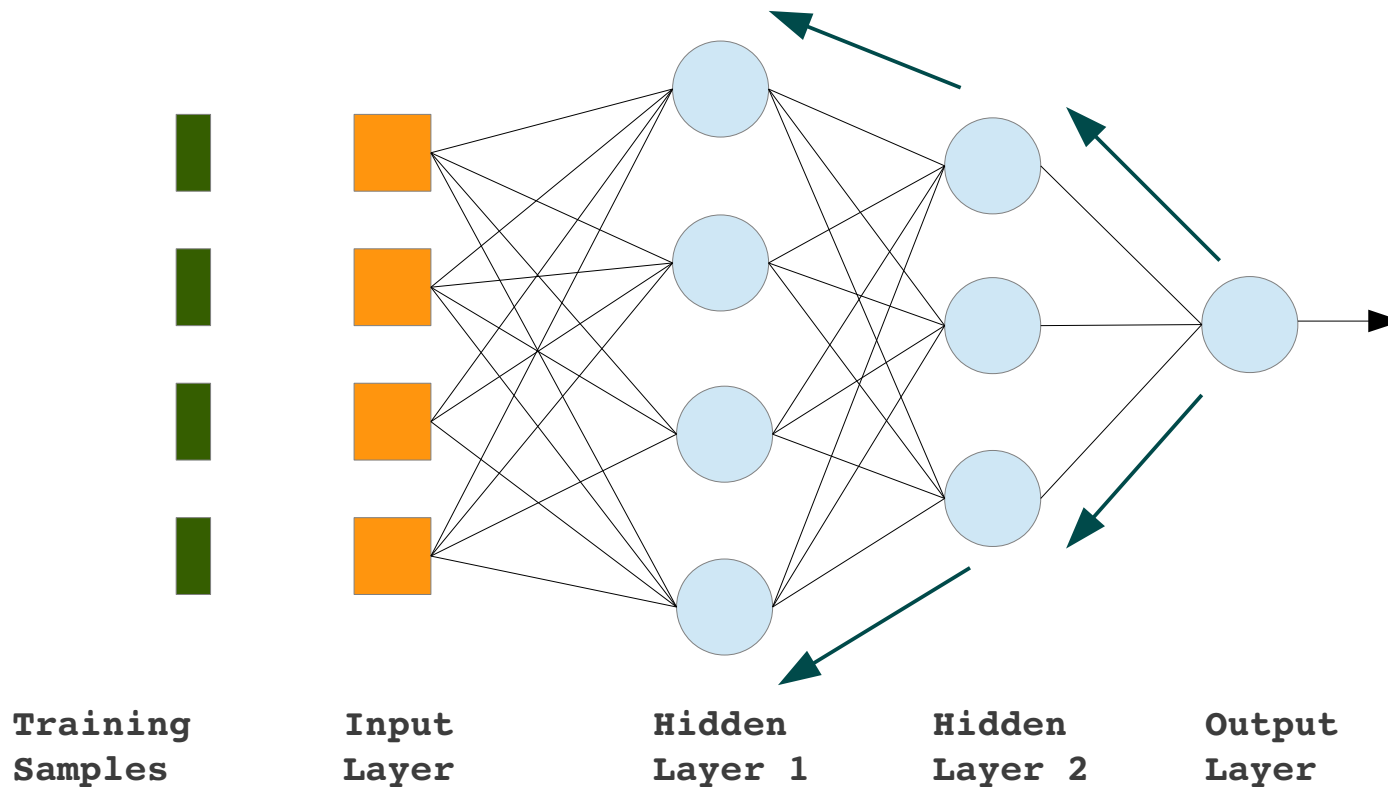
# Outline

- *Method*
- *Some experimental results*
- *Intuitions about why it works.*

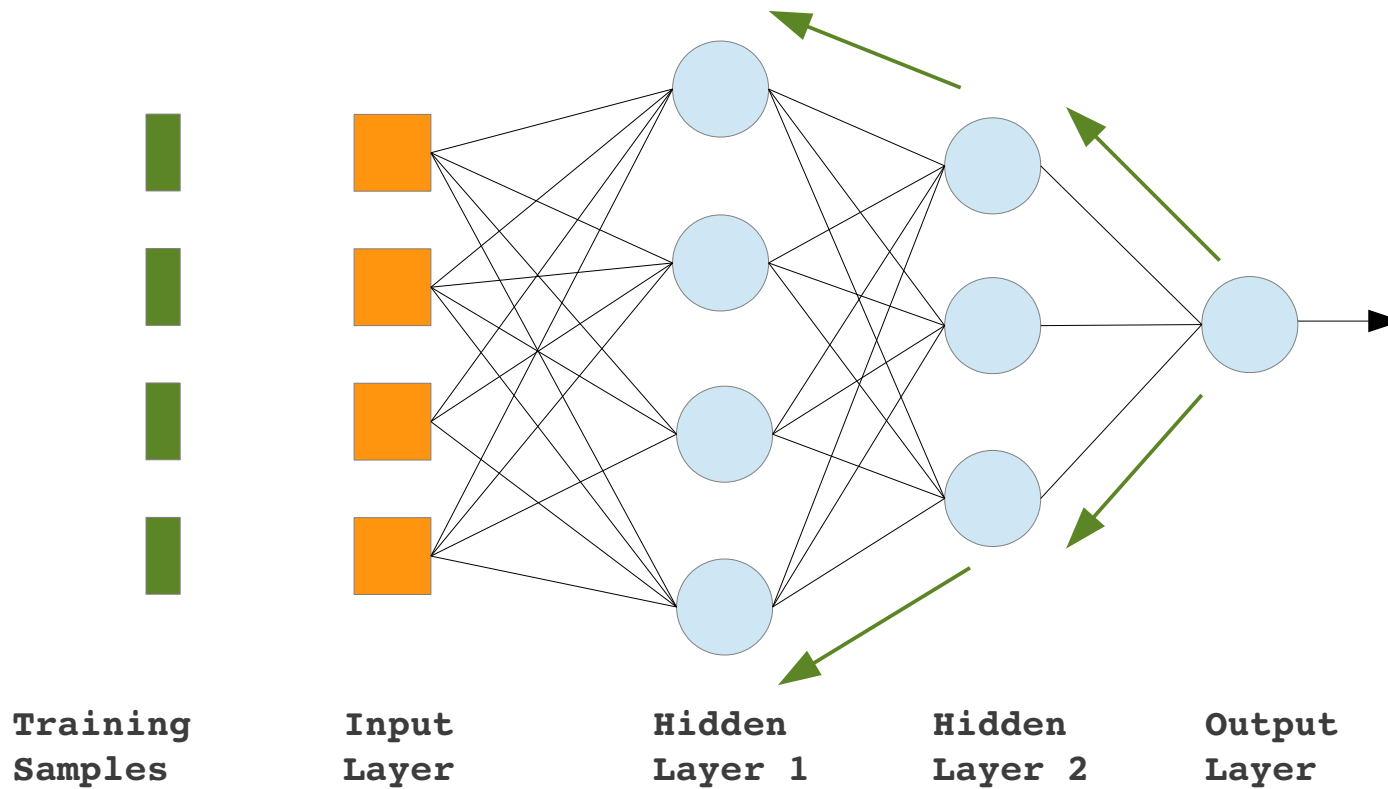
# Deep Network



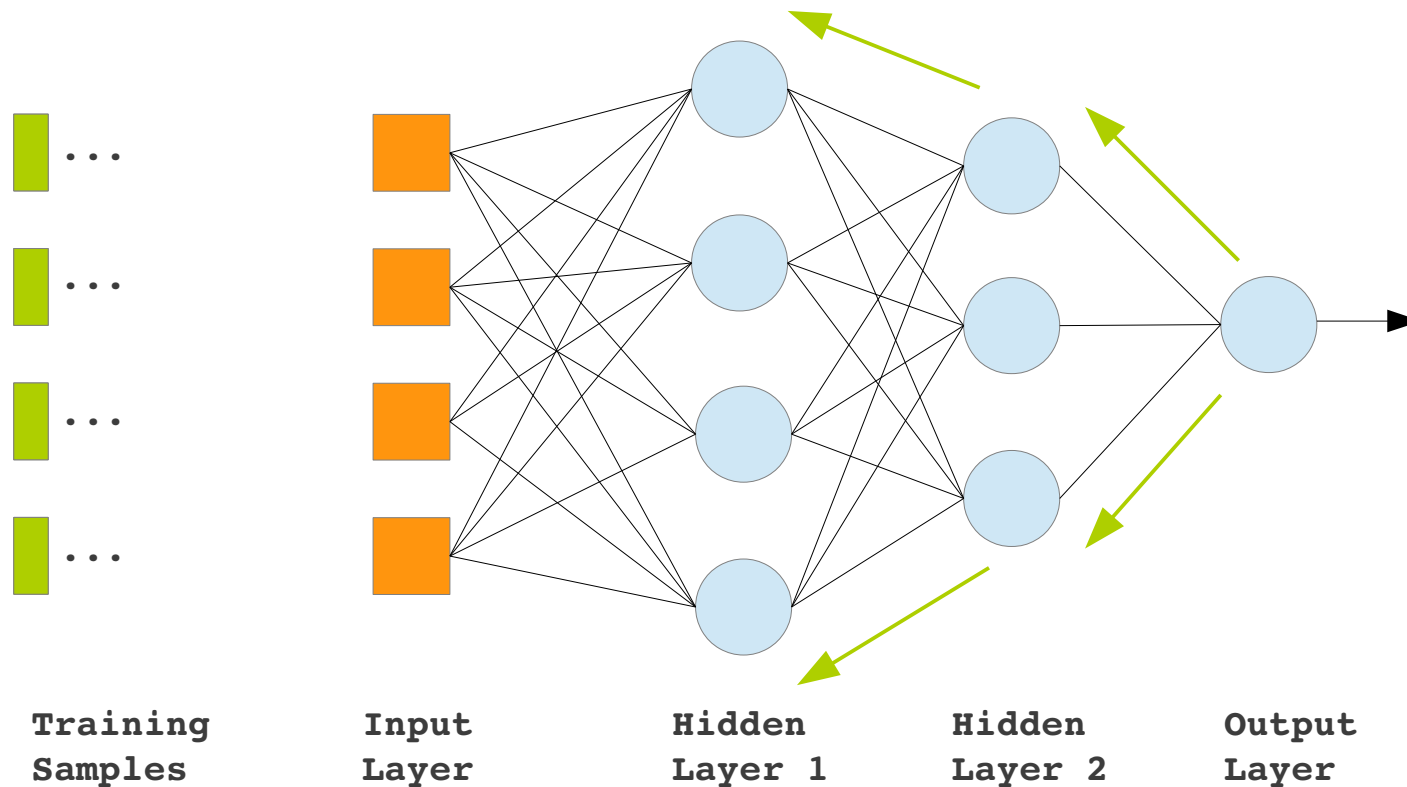
# Backpropagation (SGD)



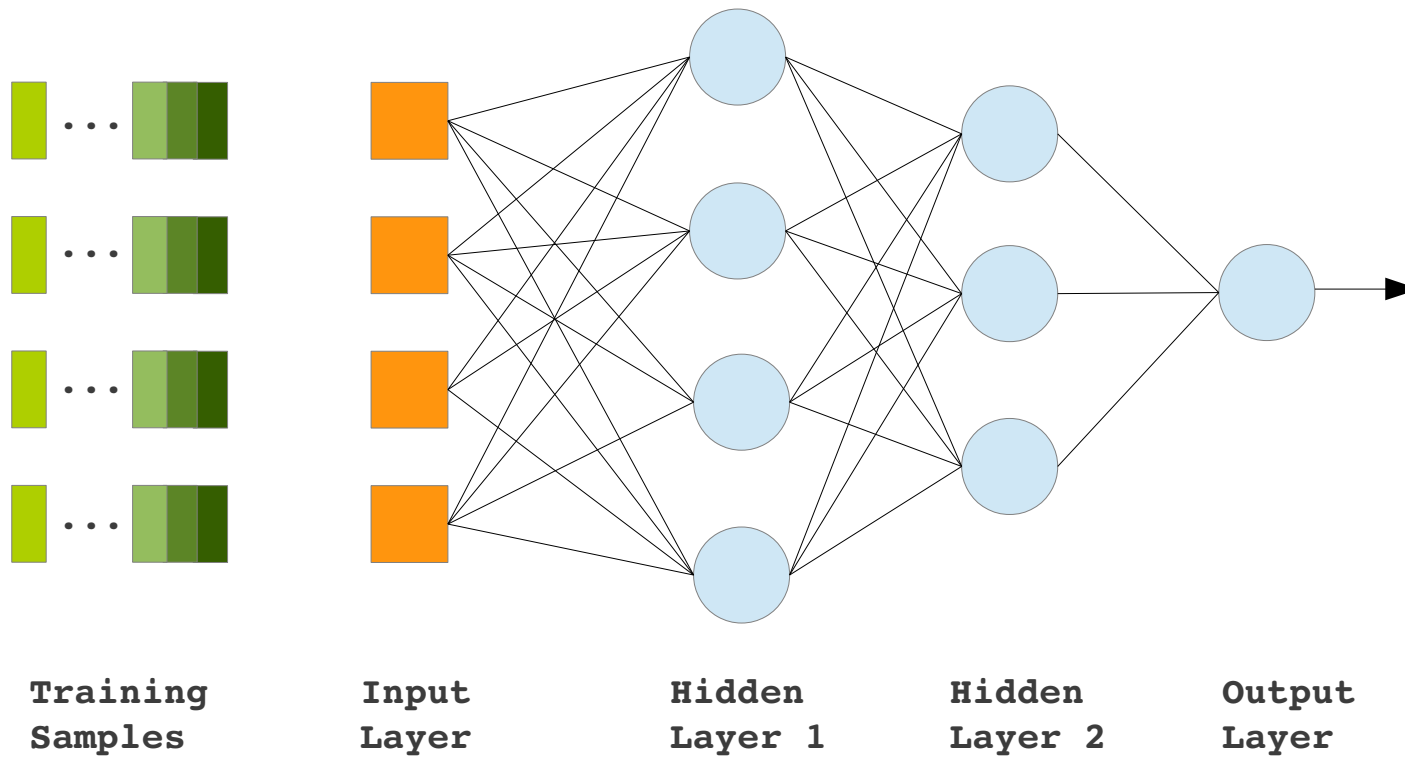
# Backpropagation (SGD)



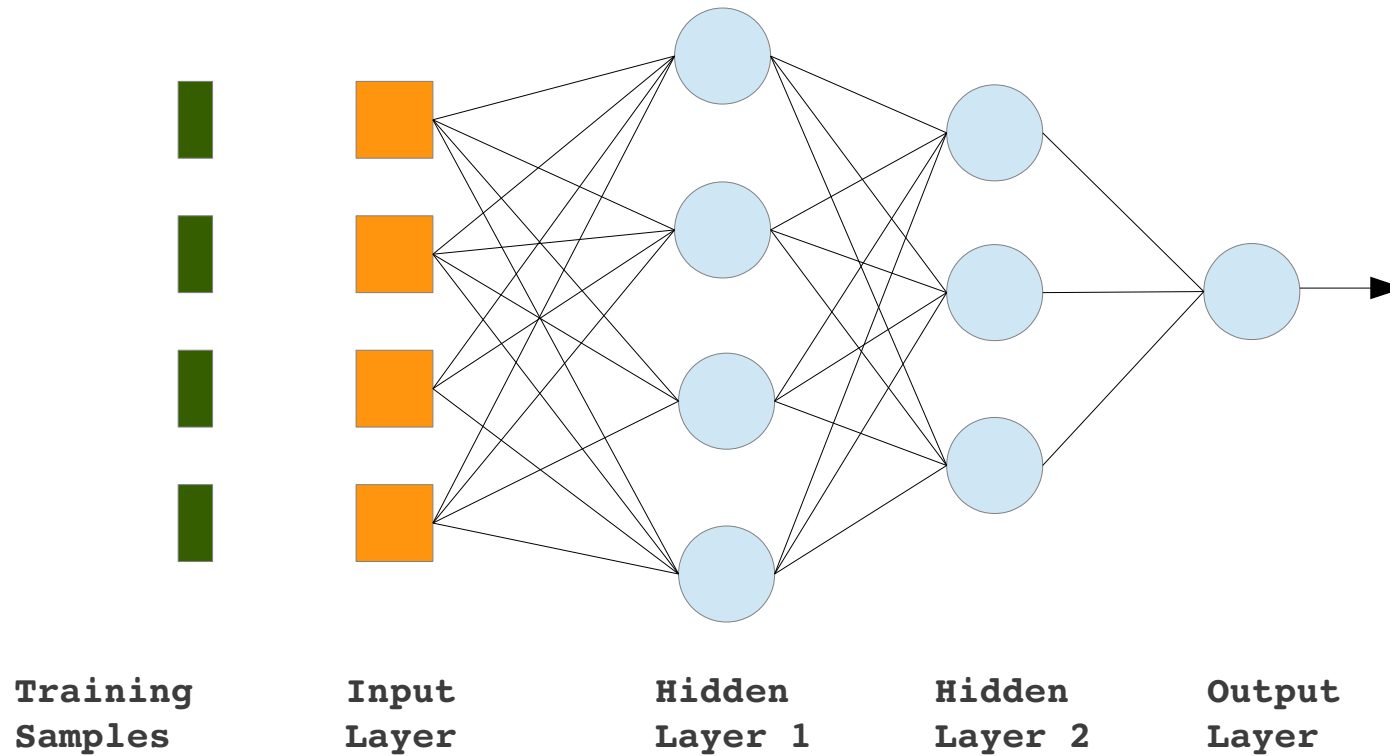
# Backpropagation (SGD)



# Dropout Iteration 0

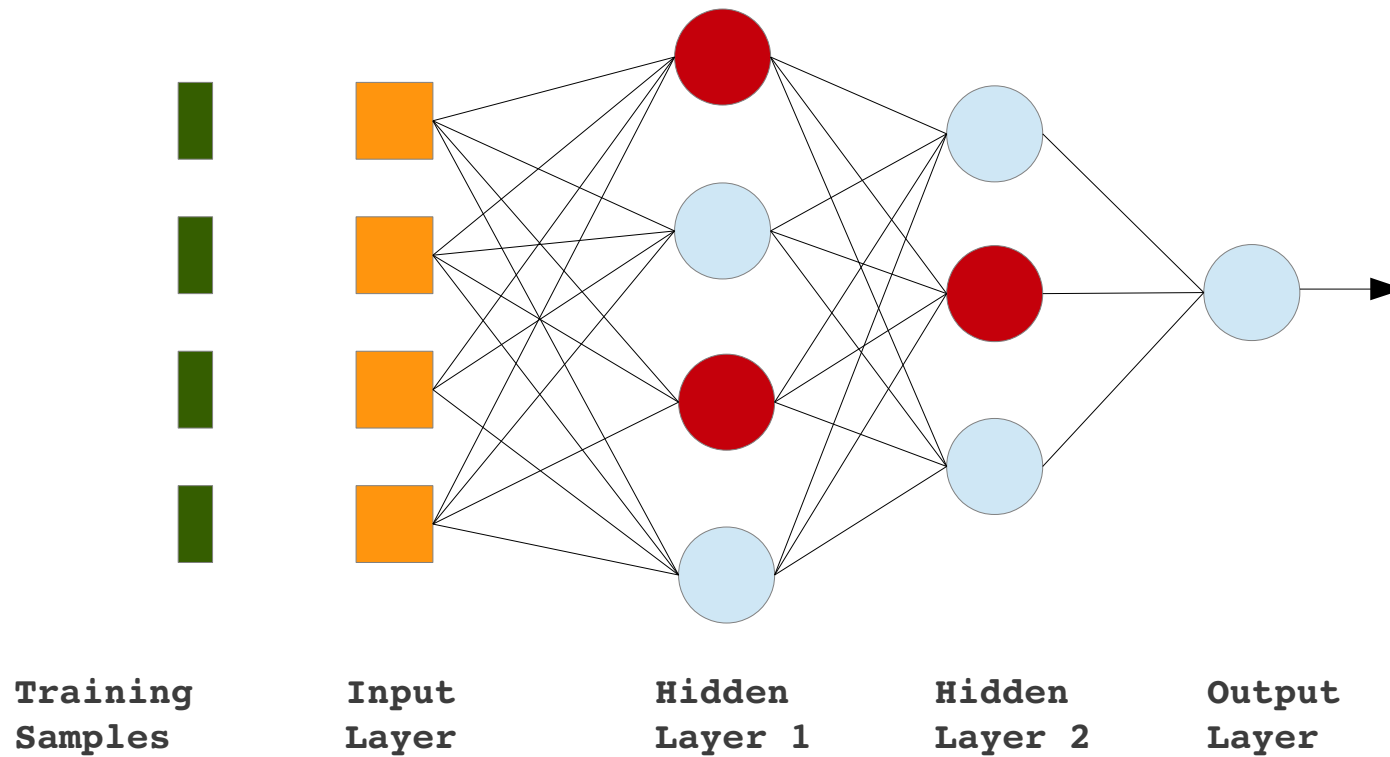


# Dropout Iteration 1

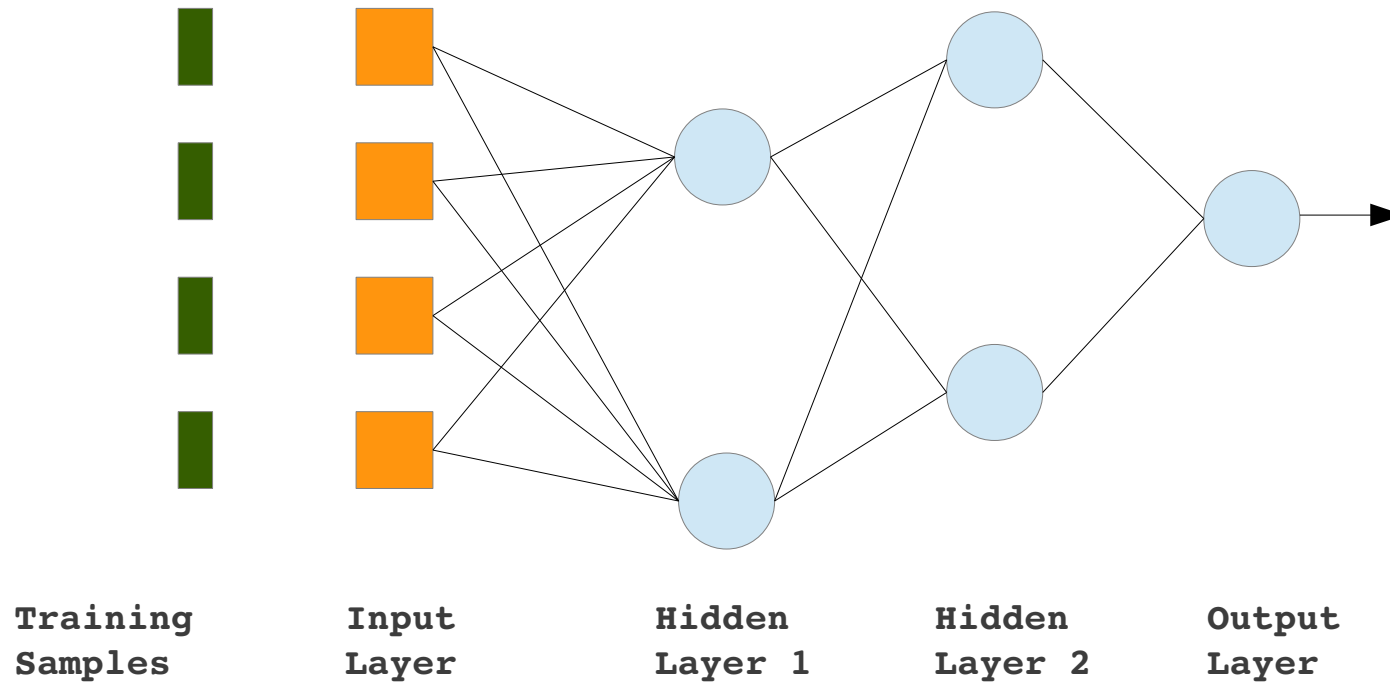




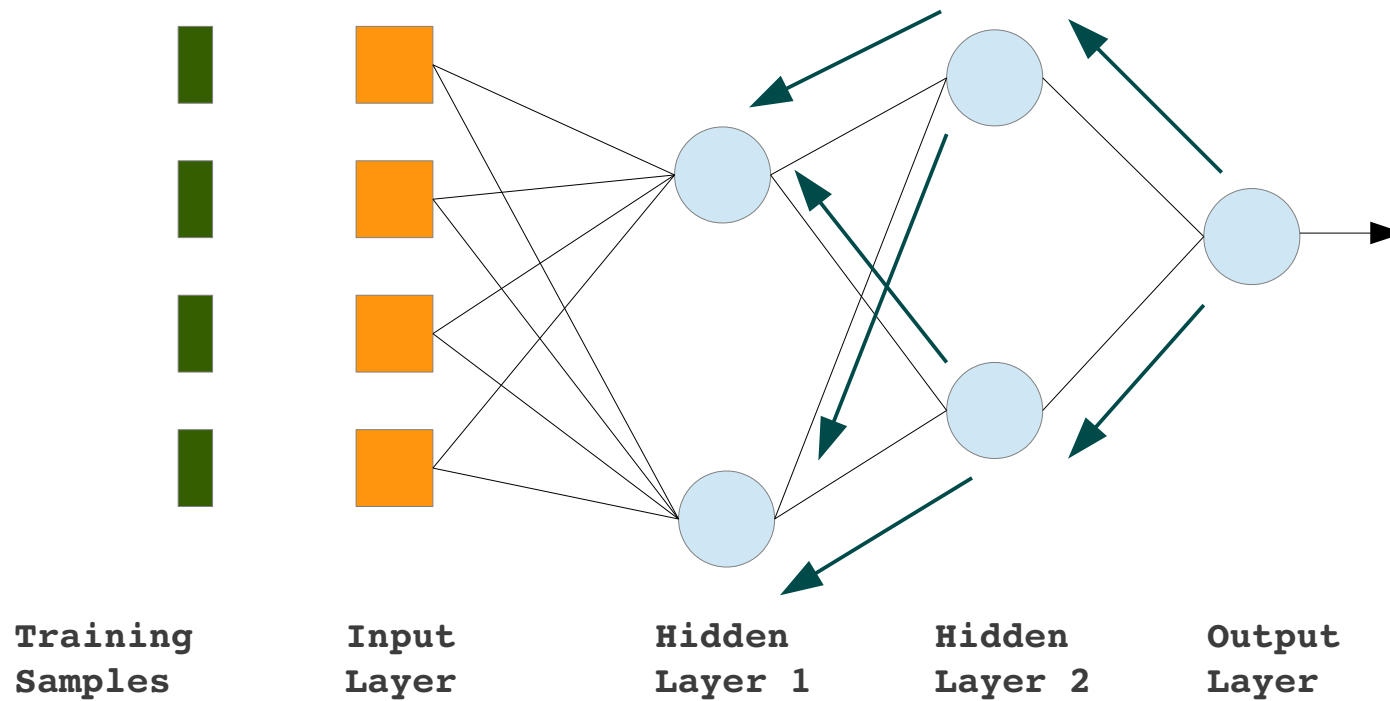
# Dropout Iteration 1



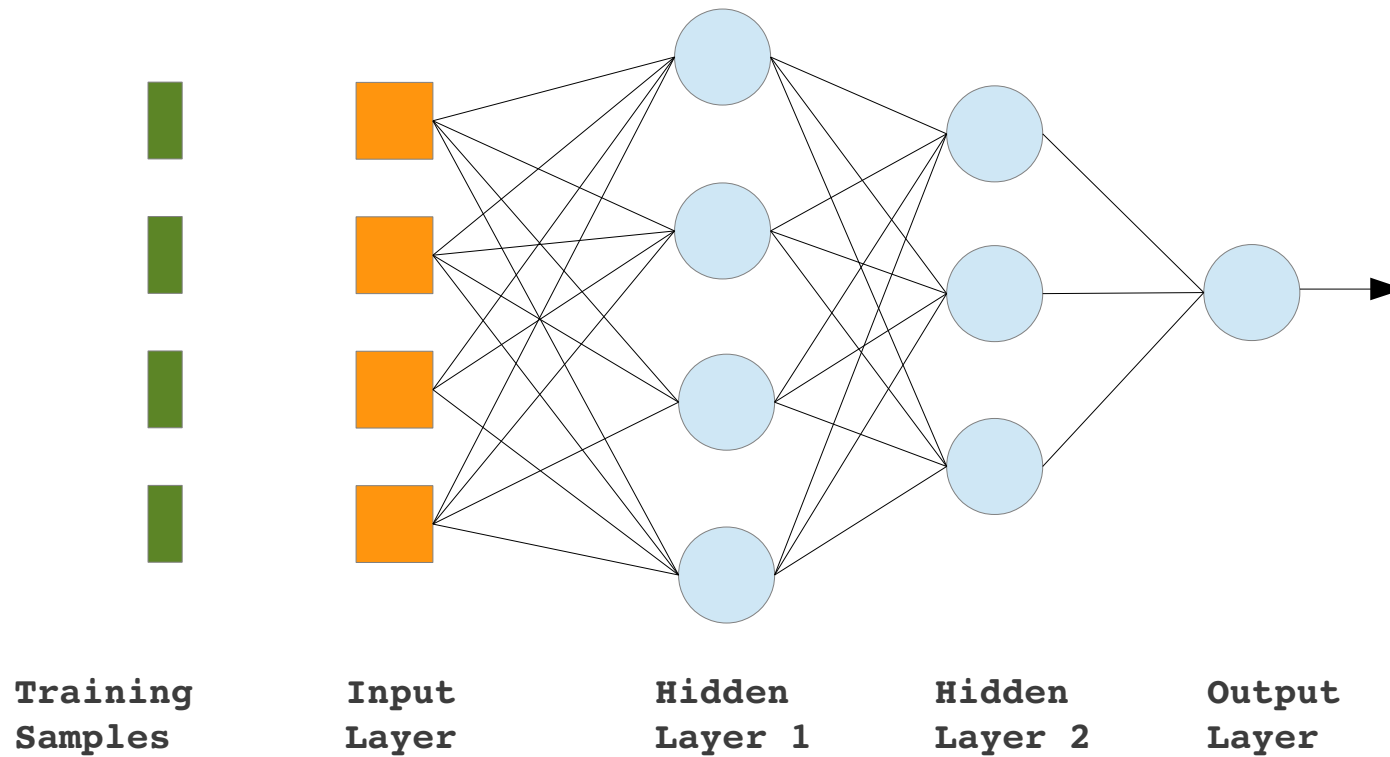
# Dropout Iteration 1



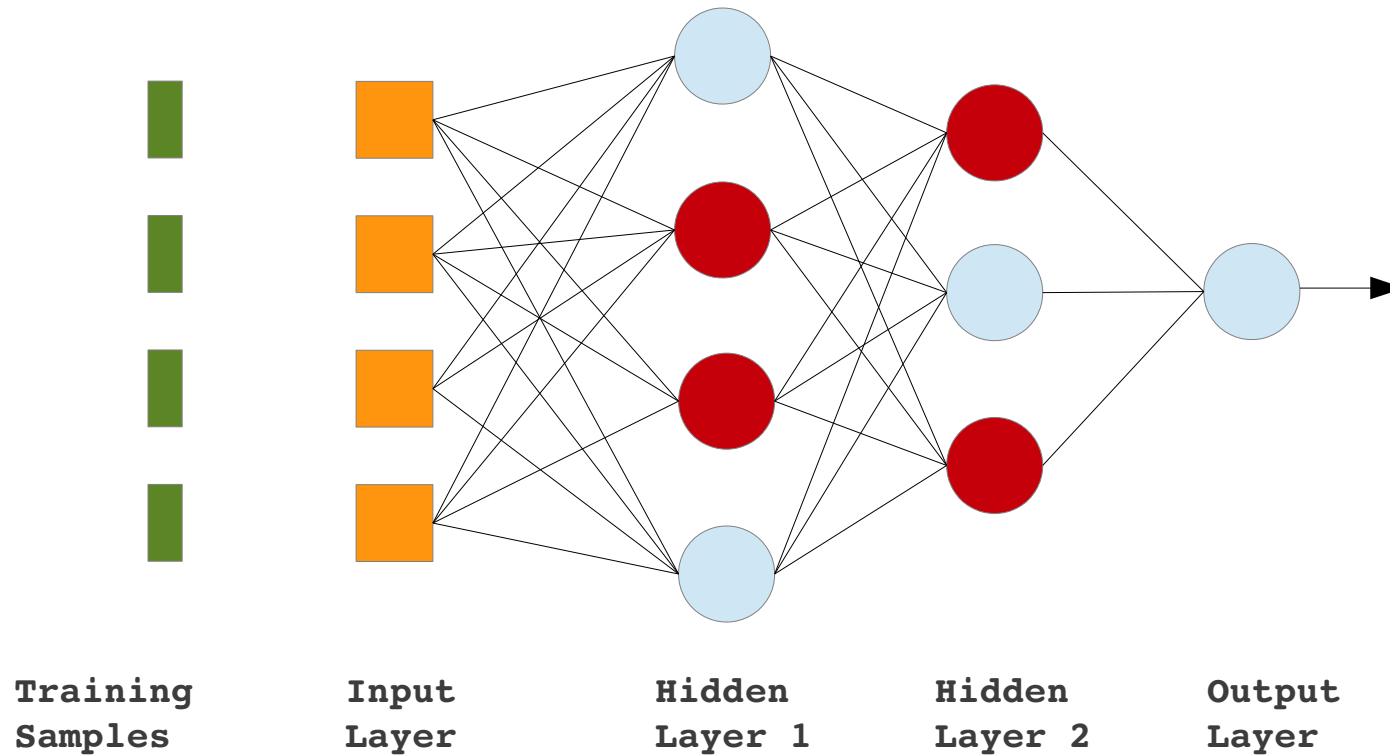
# Dropout Iteration 1



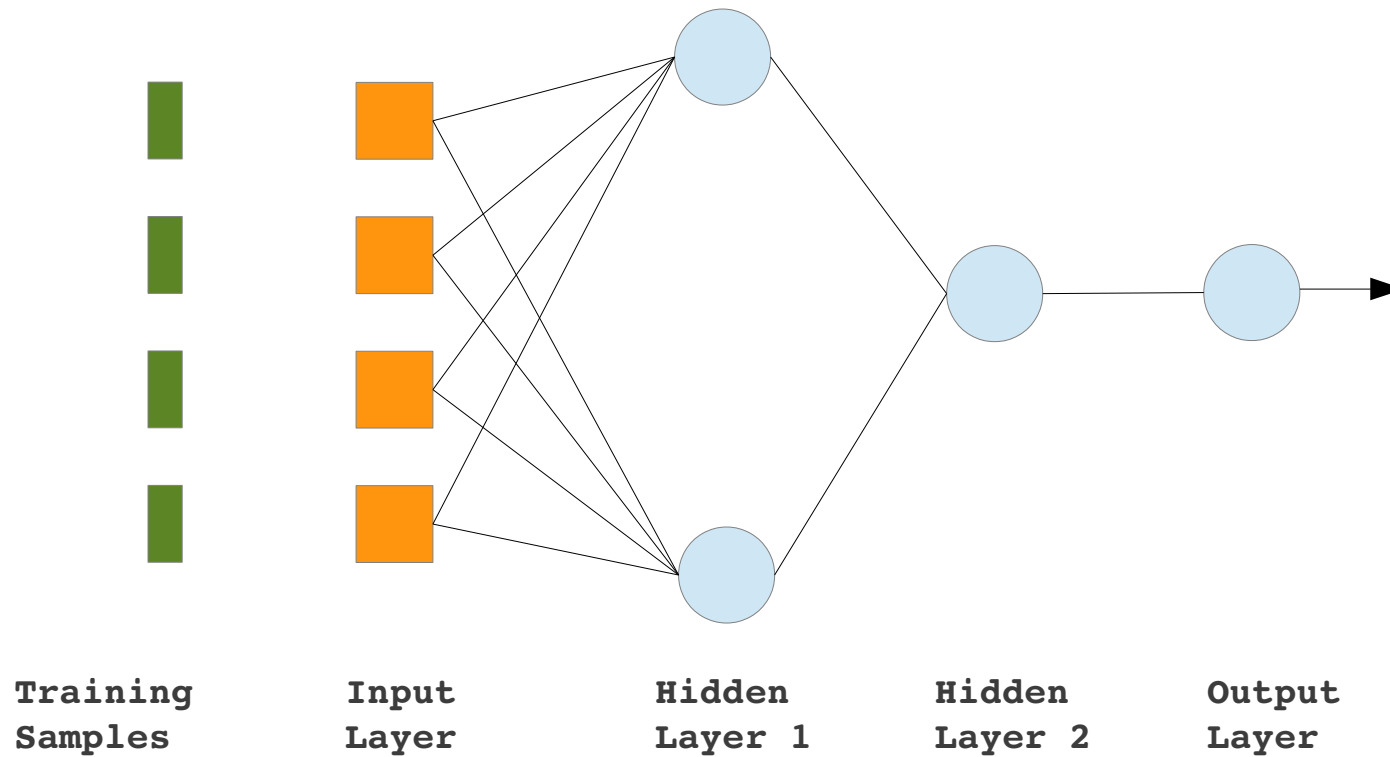
# Dropout Iteration 2



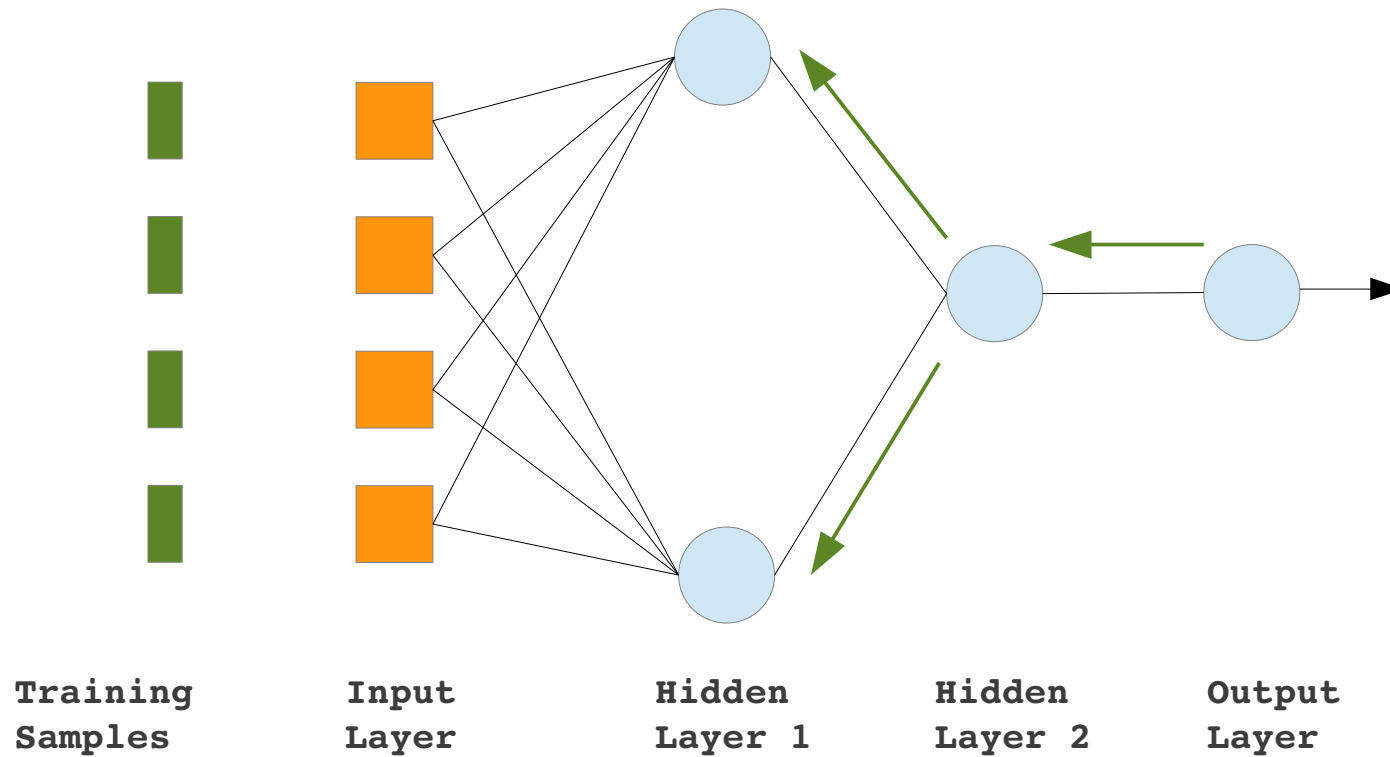
# Dropout Iteration 2



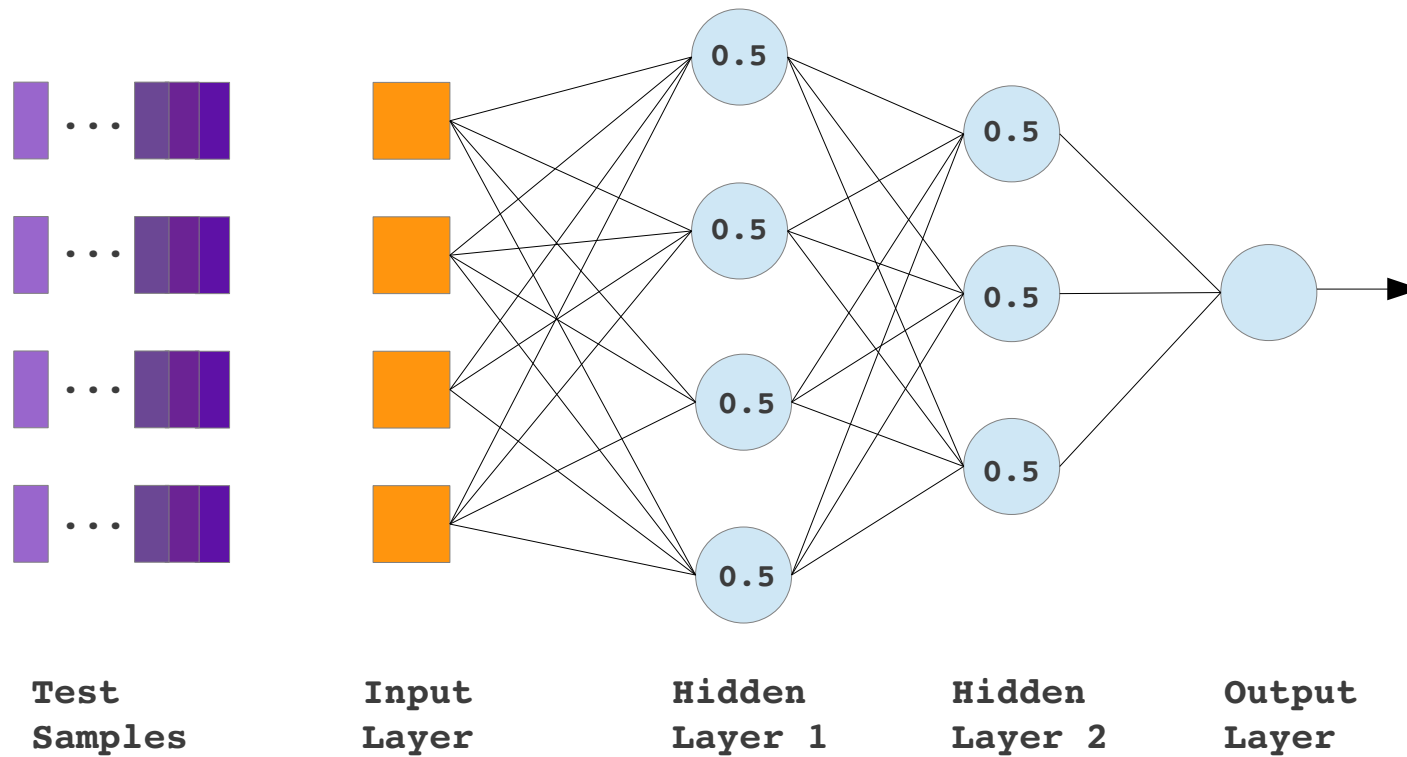
# Dropout Iteration 2



# Dropout Iteration 2

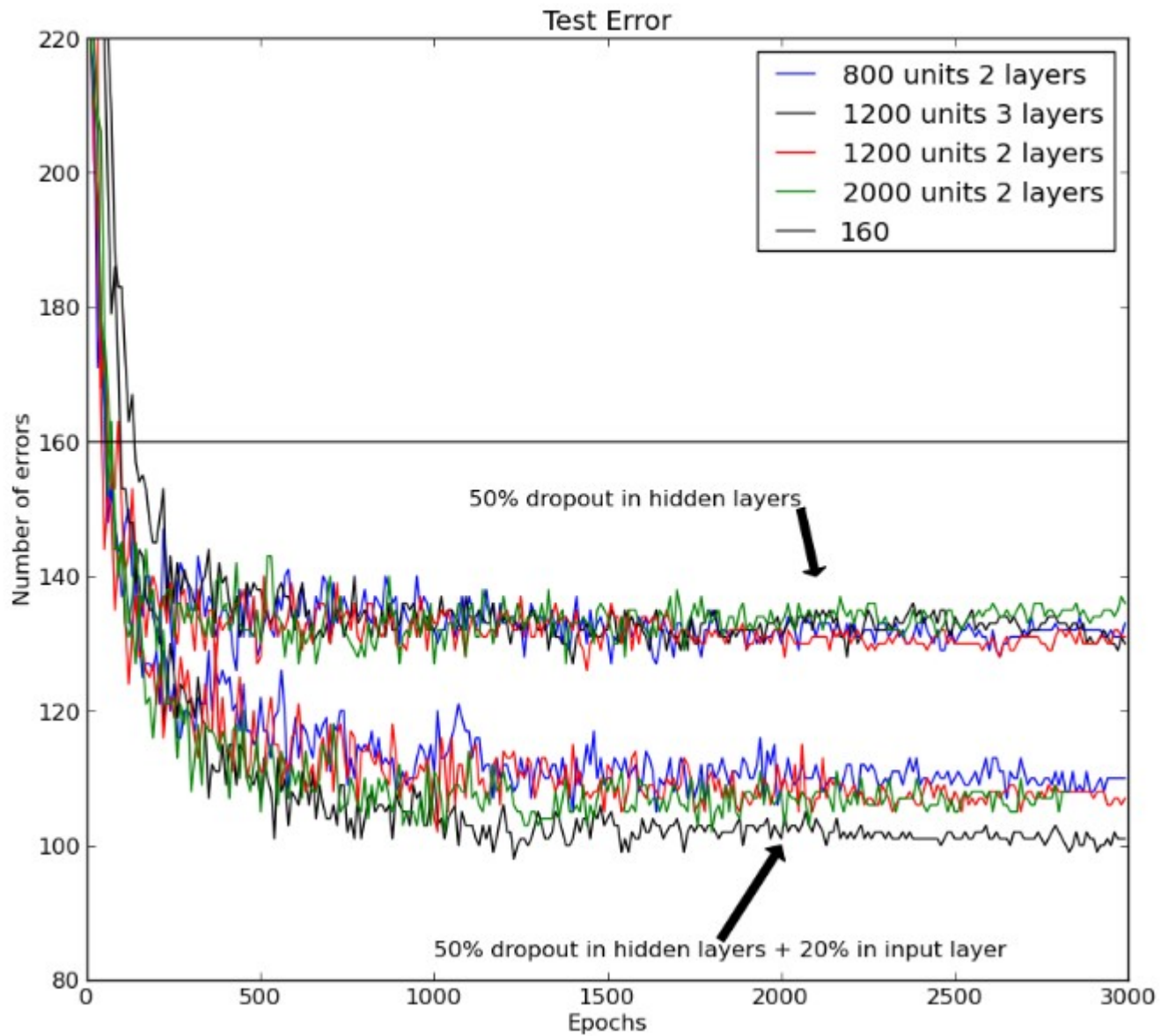


# Prediction Phase

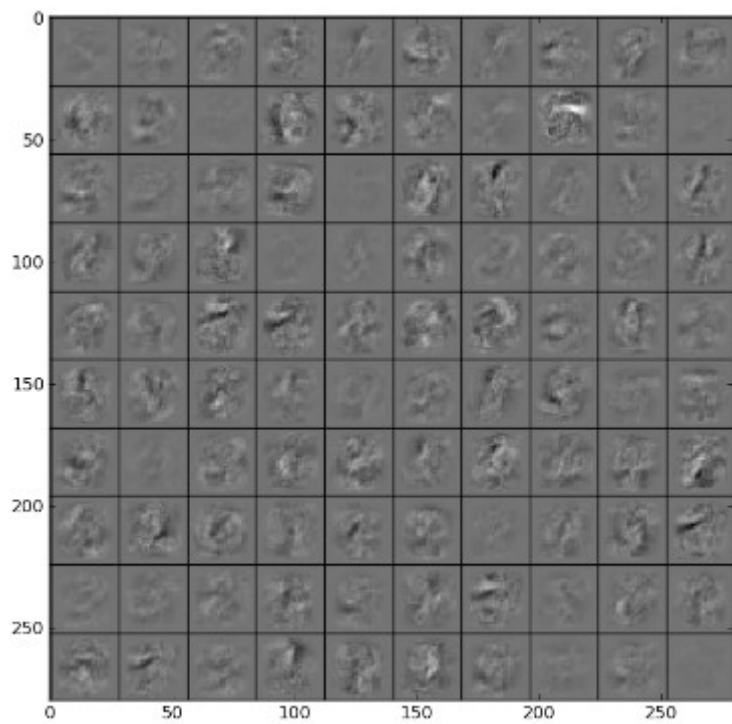




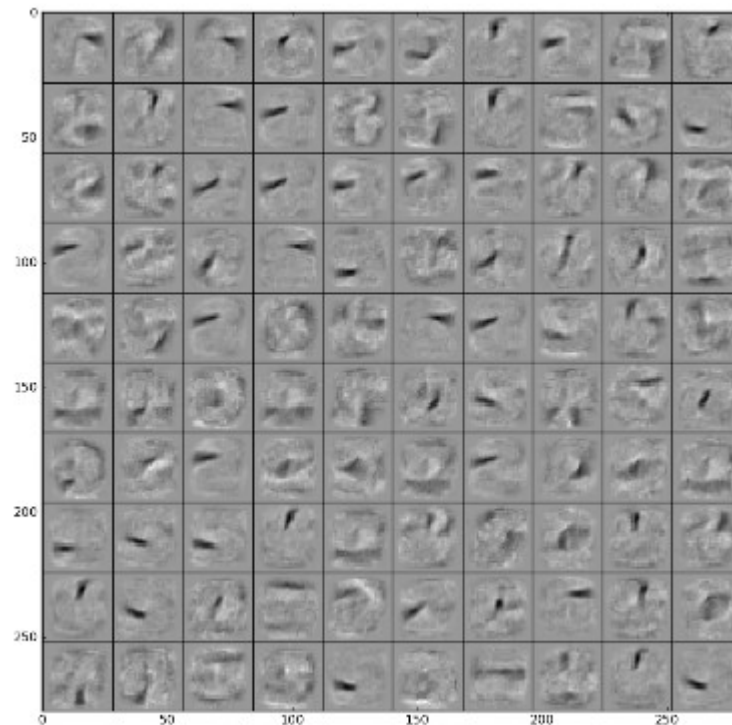
# MNIST



# MNIST

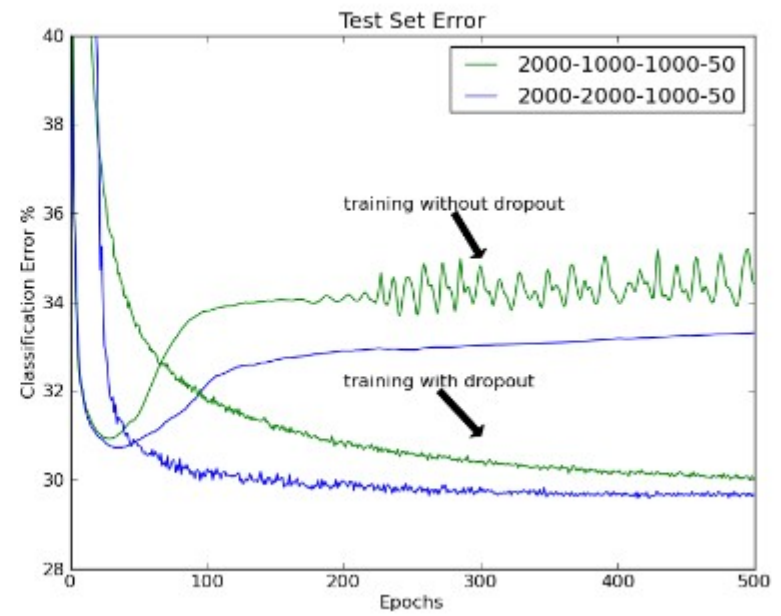
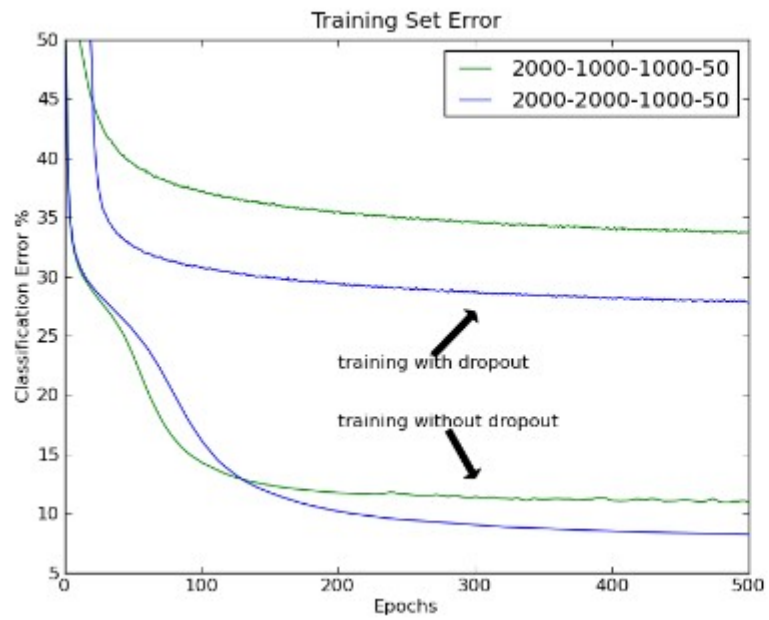


**Backprop**



**Dropout**

# Reuters



# Why Geoff Hinton is awesome



# Why Geoff Hinton is awesome

- He knows neural nets





# Why Geoff Hinton is awesome

- He **knows** neural nets
- He has brilliant **intuitions**



# Why Geoff Hinton is awesome

- He **knows** neural nets
- He has brilliant **intuitions**
- He proposes hacky heuristics that **work**



# Why Geoff Hinton is awesome

- He **knows** neural nets
- He has brilliant **intuitions**
- He proposes hacky heuristics that **work**

But.....





# Why Geoff Hinton is awesome

- He **knows** neural nets
- He has brilliant **intuitions**
- He proposes hacky heuristics that **work**

But.....

- He rarely ever gives **proofs**



# Why Geoff Hinton is awesome

- He **knows** neural nets
- He has brilliant **intuitions**
- He proposes hacky heuristics that **work**

But.....

- He rarely ever gives **proofs**
- That's **your** job



# Digging “Deeper”

**Intutions**



**Issues**

# Digging “Deeper”

## Intutions

- Random Forests



## Issues





# Digging “Deeper”

## Intutions

- Random Forests
- Naive Bayes



## Issues



# Digging “Deeper”

## Intutions

- Random Forests
- Naive Bayes
- Regularization

## Issues



# Digging “Deeper”

## Intutions

- Random Forests
- Naive Bayes
- Regularization

## Issues

- Mixtures of products of experts



# Digging “Deeper”

## Intutions

- Random Forests
- Naive Bayes
- Regularization



## Issues

- Mixtures of products of experts
- Dropout = SGD + random coordinate descent ?

