Dropout

*Presented by Subhodeep Moitra*
Outline

- Method
- Some experimental results
- Intuitions about why it works.
Backpropagation (SGD)
Backpropagation (SGD)
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Dropout Iteration 0

Training Samples  Input Layer  Hidden Layer 1  Hidden Layer 2  Output Layer
Dropout Iteration 1
Dropout Iteration 1

Training Samples
Input Layer
Hidden Layer 1
Hidden Layer 2
Output Layer
Dropout Iteration 1
Dropout Iteration 1
Dropout Iteration 2

Training Samples  Input Layer  Hidden Layer 1  Hidden Layer 2  Output Layer
Dropout Iteration 2
Dropout Iteration 2
Dropout Iteration 2
Prediction Phase

Test Samples | Input Layer | Hidden Layer 1 | Hidden Layer 2 | Output Layer
MNIST

Test Error

- 800 units 2 layers
- 1200 units 3 layers
- 1200 units 2 layers
- 2000 units 2 layers
- 160

Number of errors

50% dropout in hidden layers

50% dropout in hidden layers + 20% in input layer

Epochs
MNIST

Backprop

Dropout
Reuters
Why Geoff Hinton is awesome
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- He has brilliant *intuitions*
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- That's **your** job
Digging “Deeper”

Intuitions

Issues

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- Random Forests

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