

Author: Benjamin Smidt
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Deep Learning Resources

Contents

1	Deepsearch	2
2	General	2
3	Data Preprocessing	2
3.1	Weight Initialization	2
3.2	Batch Normalization	3
4	Loss Functions	3
5	Architectures	3
6	Hyperparameters	3
6.1	Update Rules	3
6.2	Regularization	4
6.3	Dropout	4
7	Hardware and Software	4

1 Deepsearch

1. Batch Normalization
2. Adam Optimizer
3. Xavier Initialization
4. Kaiming Initialization

2 General

1. “Training Neural Networks I.” CS231N Convolutional Neural Networks for Visual Recognition, Stanford University, 2022. [*Modeling a Neuron, Activation Functions, ReLU*]

3 Data Preprocessing

1. “Training Neural Networks II.” CS231N Convolutional Neural Networks for Visual Recognition, Stanford University, 2022. [*Mean Subtraction, Normalization, PCA and Whitening*]

3.1 Weight Initialization

1. “Training Neural Networks II.” CS231N Convolutional Neural Networks for Visual Recognition, Stanford University, 2022. [*Pitfalls All Zero, Small Random Numbers, Calibrating Variances, Batch Normalization*]
2. He et al, “Delving Deep into Rectifiers: Surpassing Human-Level Performance on ImageNet Classification”, ArXiv 2015 [*Original Kaiming Initialization Paper*].
3. Glorot, Xavier and Bengio, Y.. (2010). Understanding the difficulty of training deep feedforward neural networks. Journal of Machine Learning Research - Proceedings Track. 9. 249-256. [*Xavier Initilization Paper*]

3.2 Batch Normalization

1. Sergey Ioffe and Christian Szegedy, “Batch Normalization: Accelerating Deep Network Training by Reducing Internal Covariate Shift” , ICML 2015. [*Batch Normalization Paper*]

4 Loss Functions

1. “Training Neural Networks I.” CS231N Convolutional Neural Networks for Visual Recognition, Stanford University, 2022. [*Problem of Large Number of Classes, Attribute Classification, Regression v. Classification*]

5 Architectures

1. “Training Neural Networks I.” CS231N Convolutional Neural Networks for Visual Recognition, Stanford University, 2022. [*Layer-Wise Organization, Naming Conventions, Ex. Feed-forward, Representational Power, Capacity*]

6 Hyperparameters

6.1 Update Rules

1. “Training Neural Networks III.” CS231N Convolutional Neural Networks for Visual Recognition, Stanford University, 2022. [*SGD, Momentum, Nesterov Momentum, Adagrad, RMSprop, Adam*]
2. Diederik Kingma and Jimmy Ba, “Adam: A Method for Stochastic Optimization”, ICLR 2015 [*Original Adam Paper*]

6.2 Regularization

1. “Training Neural Networks II.” CS231N Convolutional Neural Networks for Visual Recognition, Stanford University, 2022. [*L2, L1, Max Norm Constraints*]

6.3 Dropout

1. “Training Neural Networks II.” CS231N Convolutional Neural Networks for Visual Recognition, Stanford University, 2022. [*Dropout*, *Inverted Dropout*, *Code Implementation*]
2. Srivastava et al. “Dropout: A Simple Way to Prevent Neural Networks from Overfitting.” University of Toronto, 2014
3. Hinton, Geoffrey E. et al. “Improving neural networks by preventing co-adaptation of feature detectors.” ArXiv, 2012. [*Dropout*]

7 Hardware and Software

1. Chadha, Amani. “CS231N Deep Learning Hardware and Software.” Aman’s AI Journal, 2020.