Lecture note: https://github.com/TienLungSun/AI-Lecture-notes => 2.Regression

PyTorch code: https://github.com/TienLungSun/2020-PyTorch-Colab

Take out concepts	Slide No	PyTorch code example	Home work	Side No
1. How computer learns from data? (Machine learning mechanism)	3			
2. In the context of deep learning, what is *f*? How *f* calculate output y from input x?	8	1.2 MLP regression		
3. How to adjust the *NN* parameter θ to minimize *L*?	9, 6			
4. What to do when the training results are not good?	14	1.2.1 Learn from sparse data	HW 3(1)	23
5. What to do when the training results are good but testing results are not good?	13, 14	1.2.2 Overfitting 1.2.3 Overfitting (cubic)	HW 3(2)	27
6. Early stop (Stop gradient decent to avoid overfitting)	31	1.2.3 Early stop	HW 3(3)	33
7. L2 regularization (Minimize weights to avoid overfitting)	34, 35	1.2.3 L2 regularization	HW 3(4)	37
8. L1 regularization	38	1.2.3 L1 regularization	HW 3(5)	40
9. Compare the vanilla gradient decent, gradient decent with L2 regularization, gradient decent with L1 regularization.	6, 7, 35, 38			
10. How to initialize *NN* with small weights	41	1.2.3 Initialize small weights		
11. Drop out (Drop out nodes to avoid overfitting)	44, 45	1.2.3 Dropout	HW 3(6)	47
12. Why drop out works?	48, 50			
13. Why multiple *NN* weight by (1-p%) during testing?	49, 52			
14. Report your *NN* performance using bias and variance. (Don't just report the best performance case.)	55, 56	1.2.4 Variance of predicting error	HW 3(7)	59