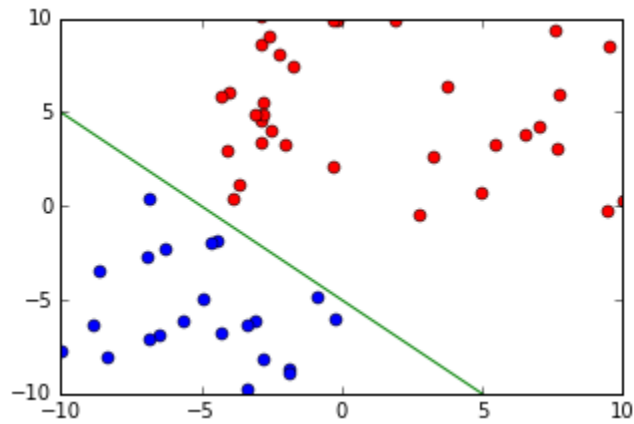
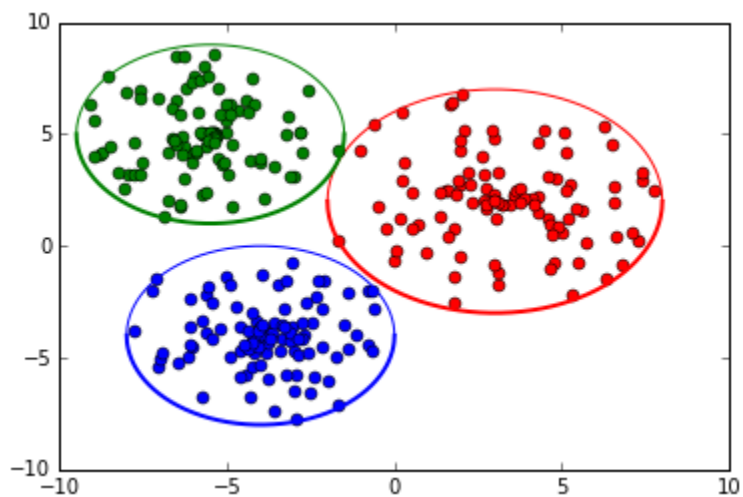
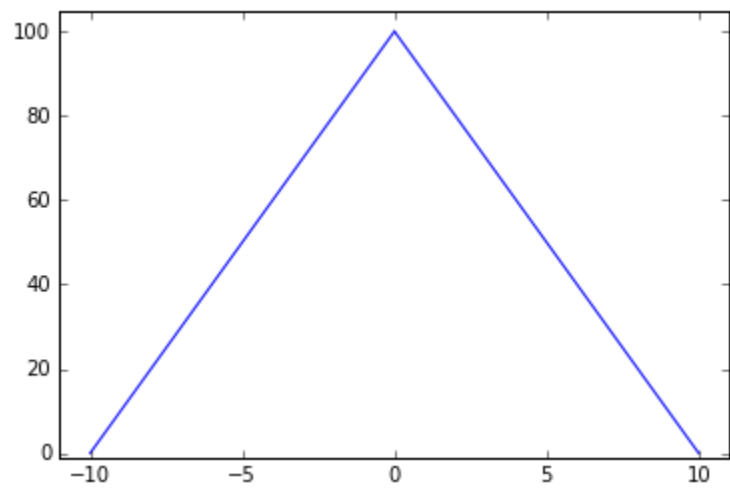
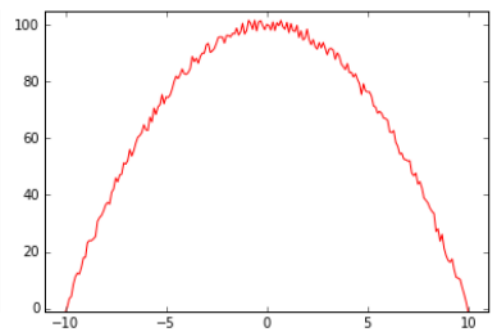
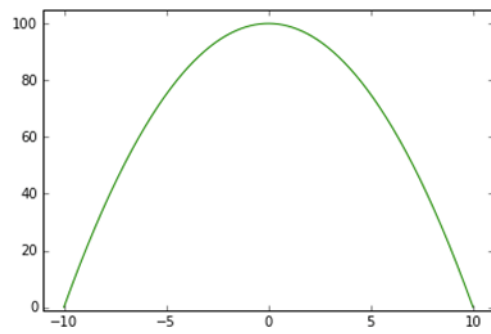
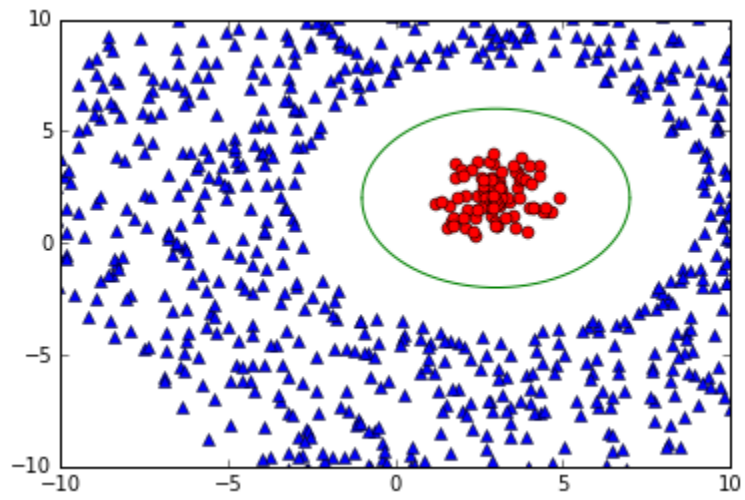


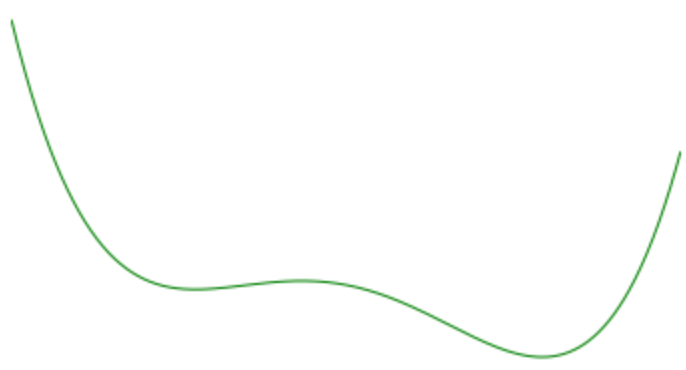
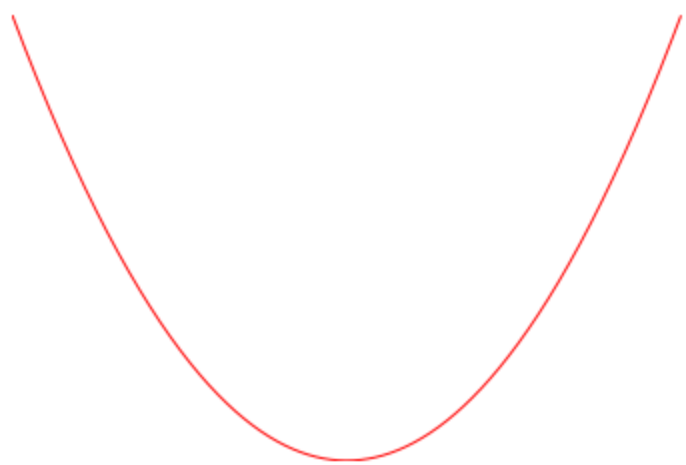
## Chapter 1: Machine Learning – An Introduction

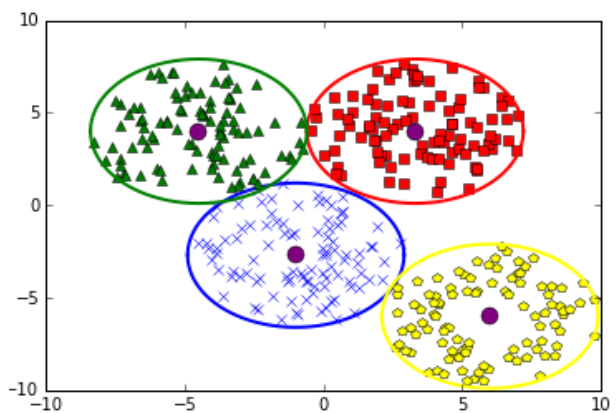
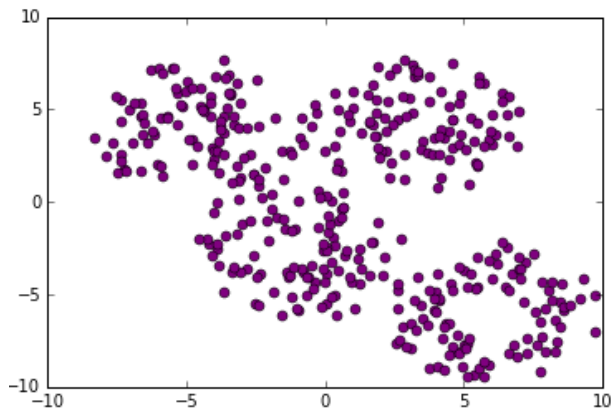
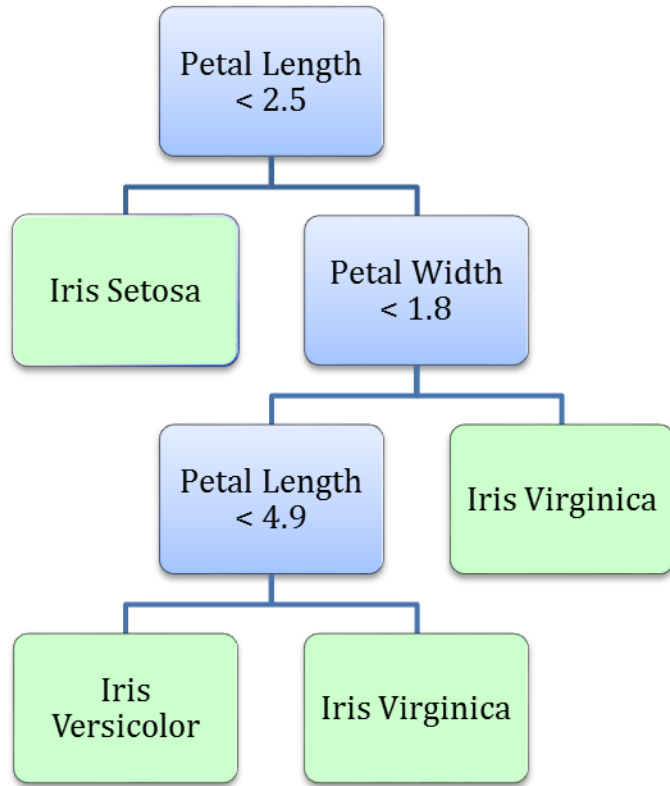


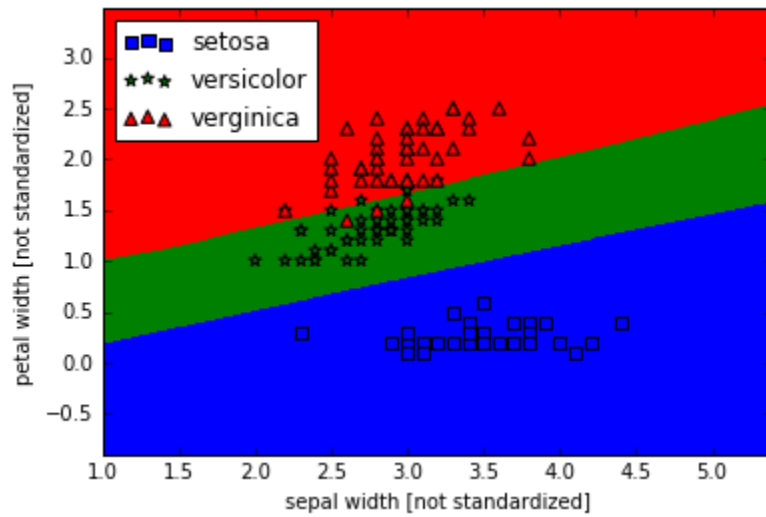
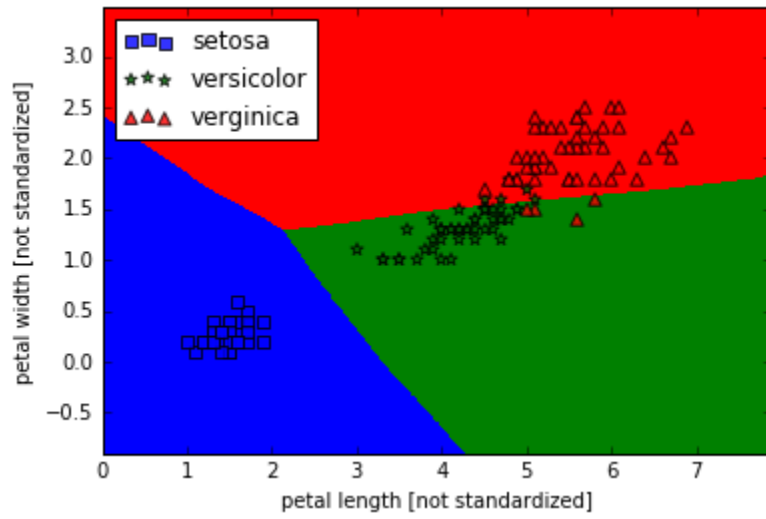
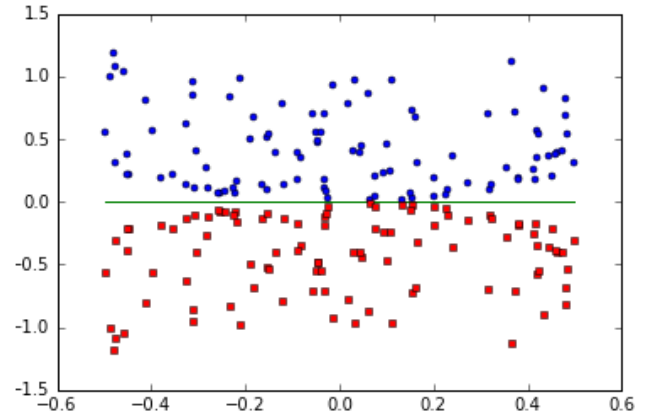
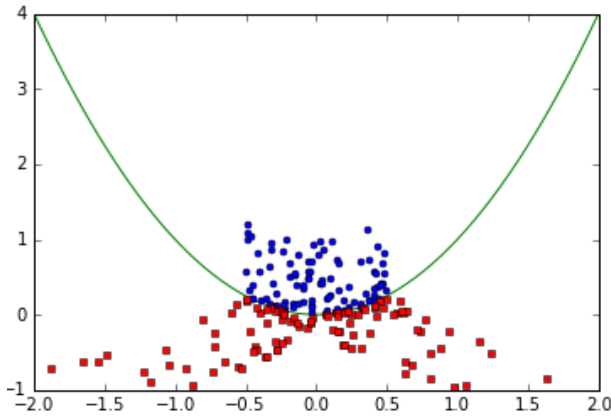
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7 5 3 5 3  
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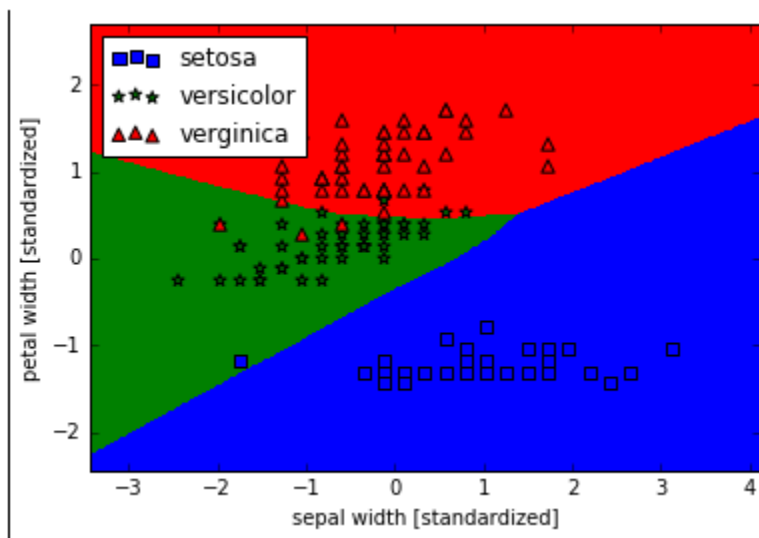
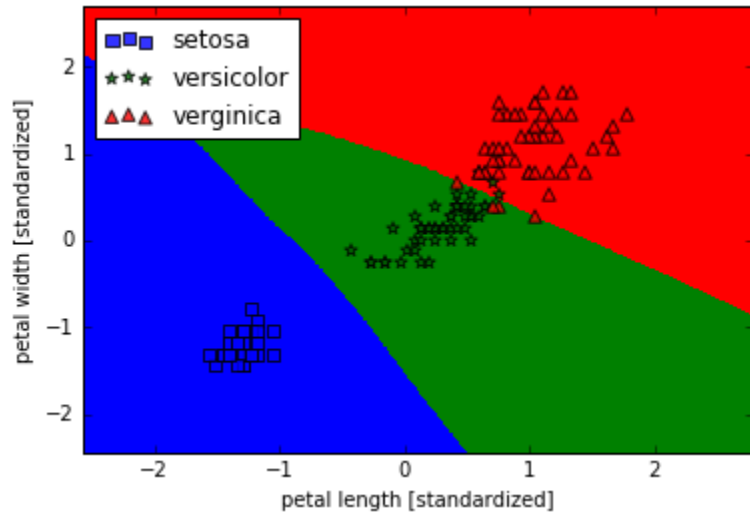




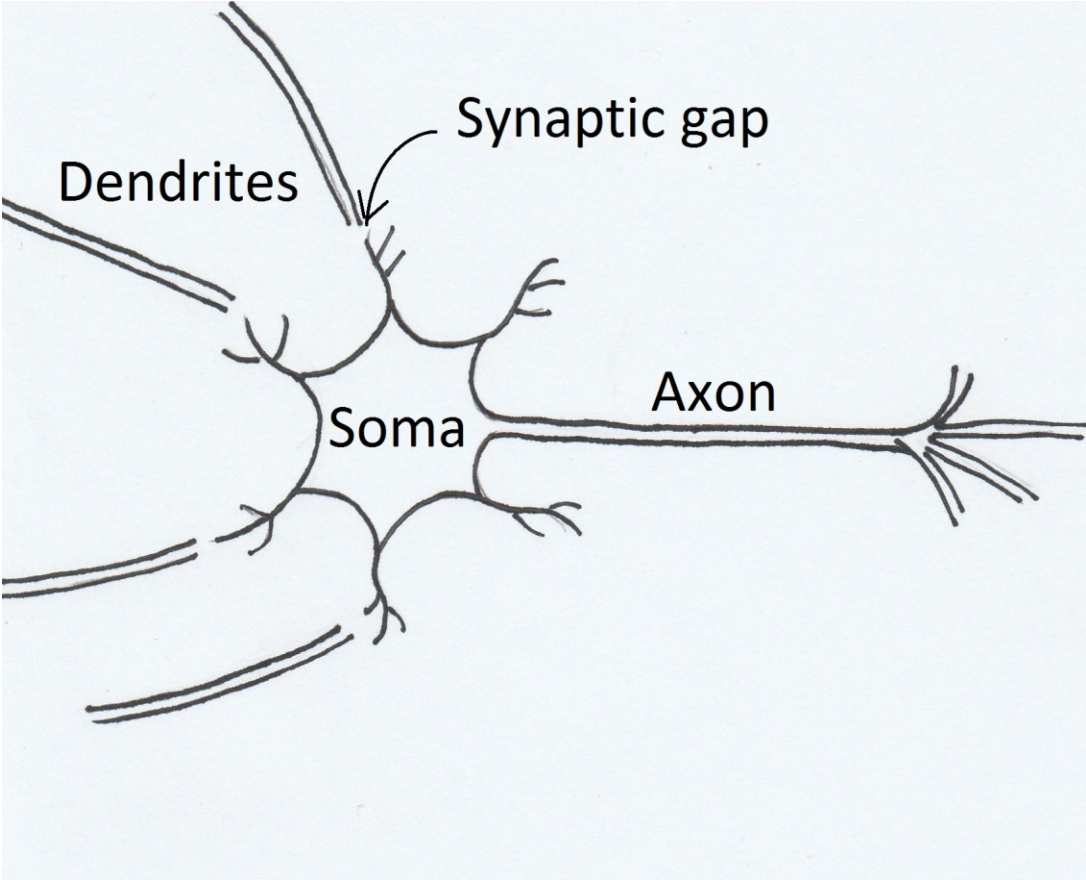


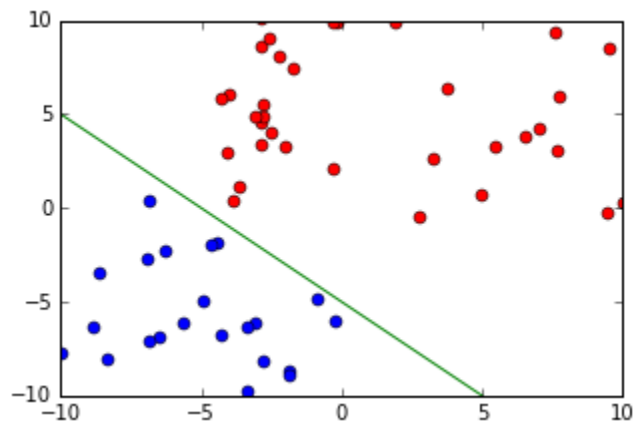
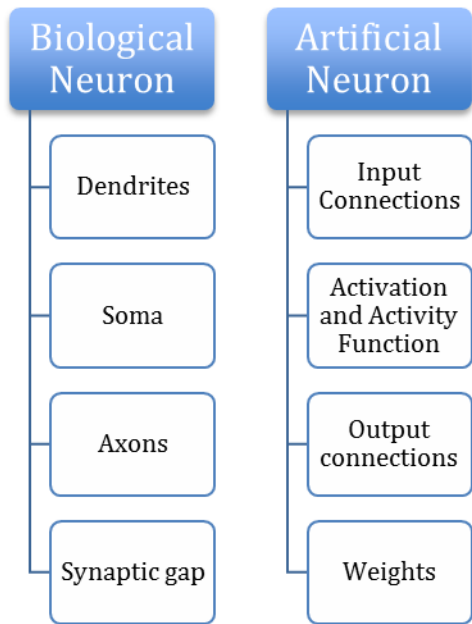




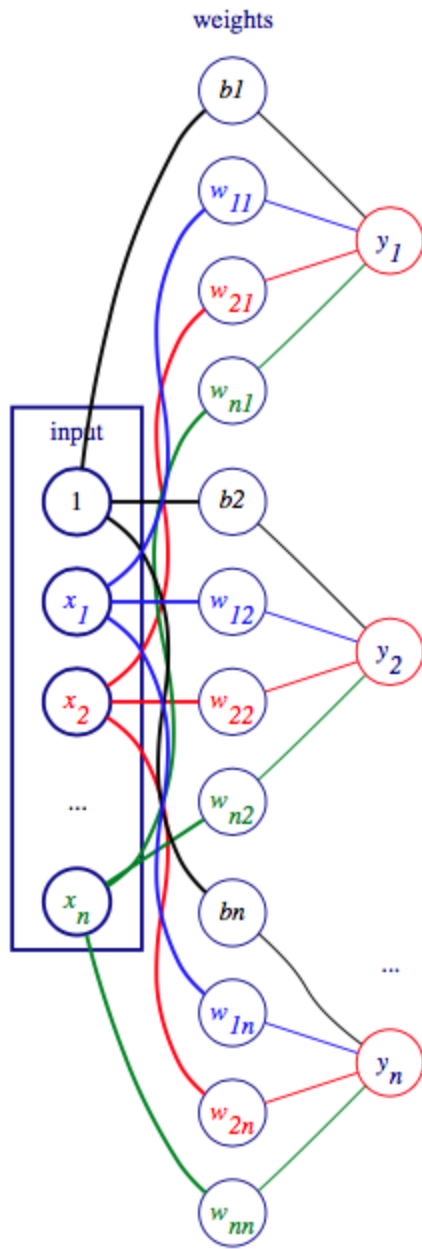


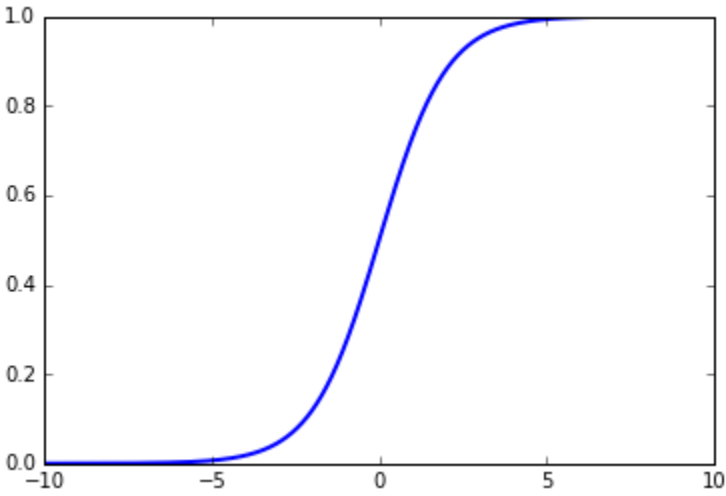
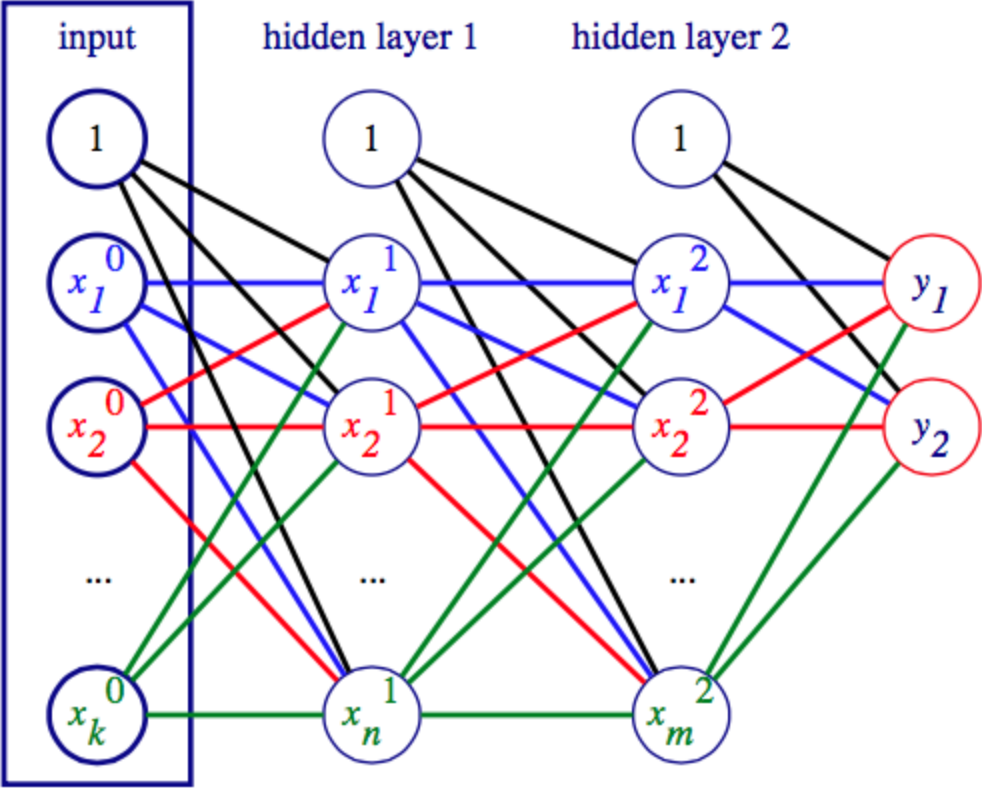
Chapter 2: Neural Networks

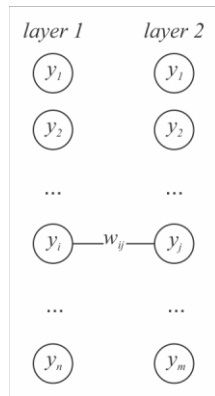
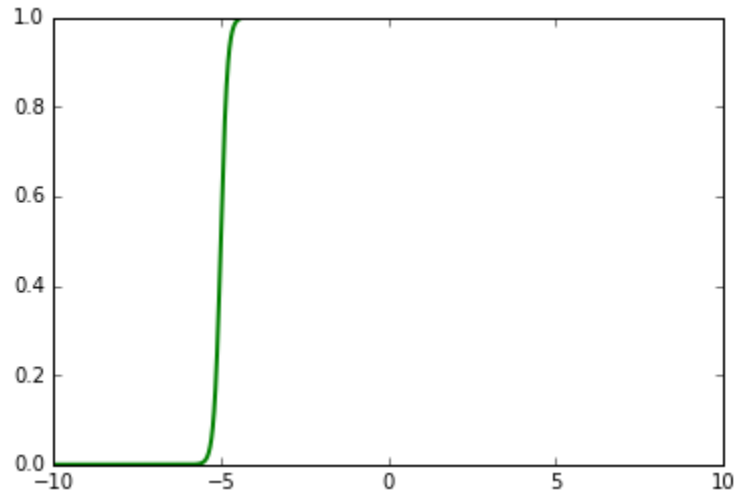
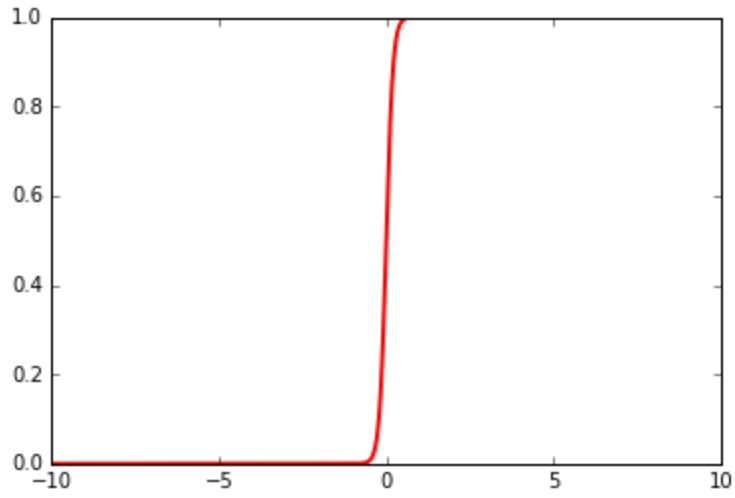


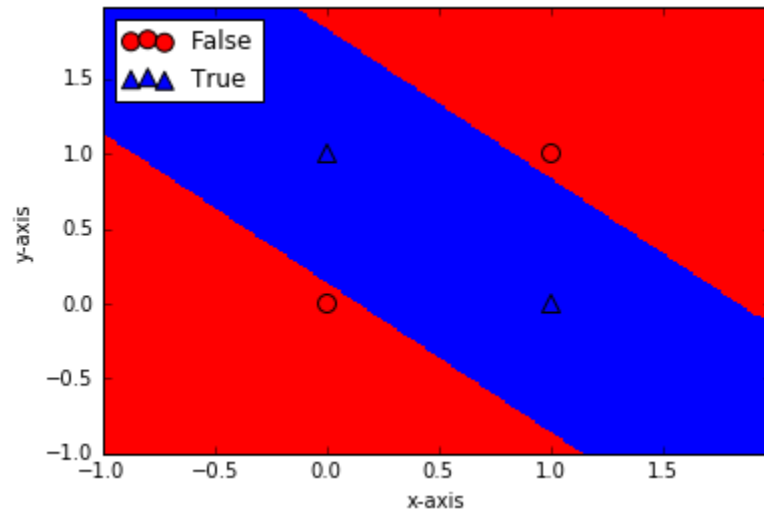
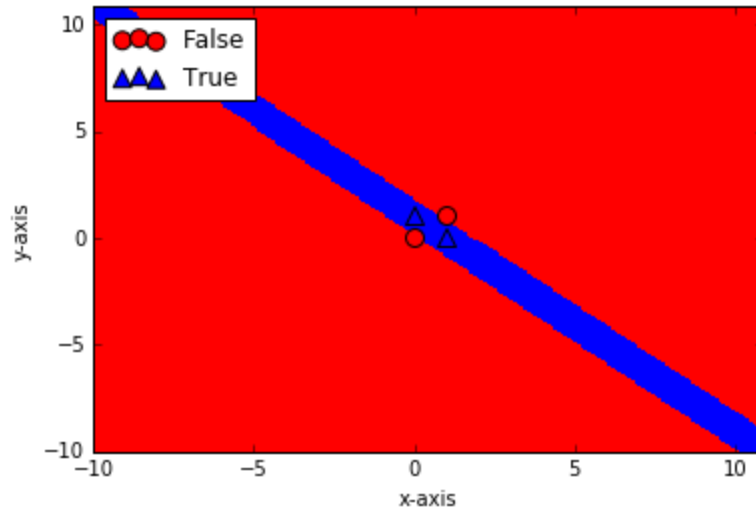


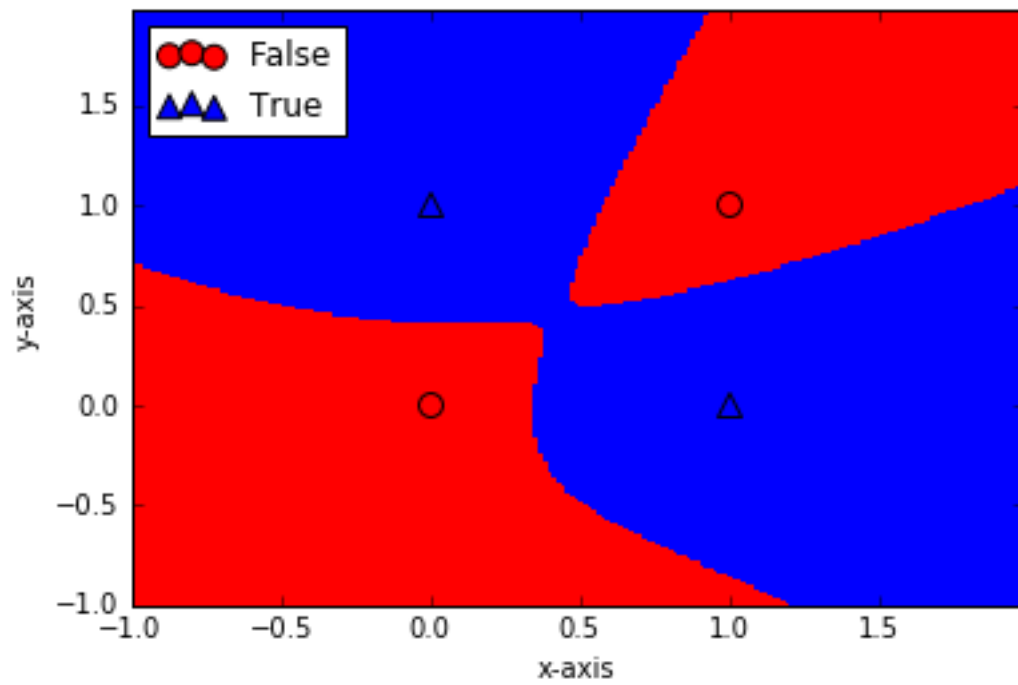
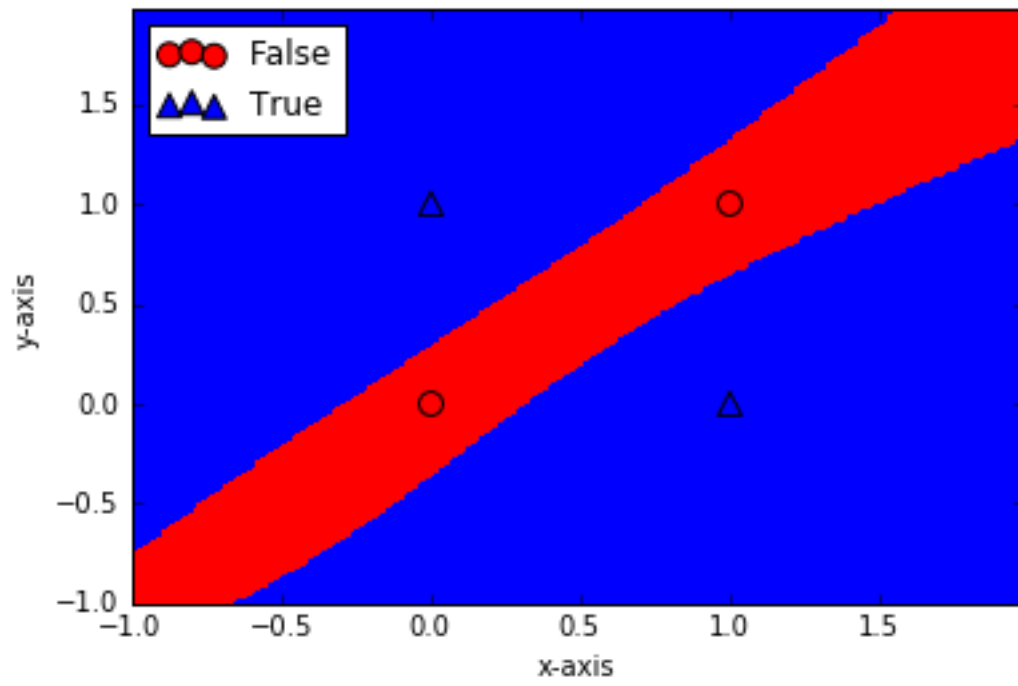




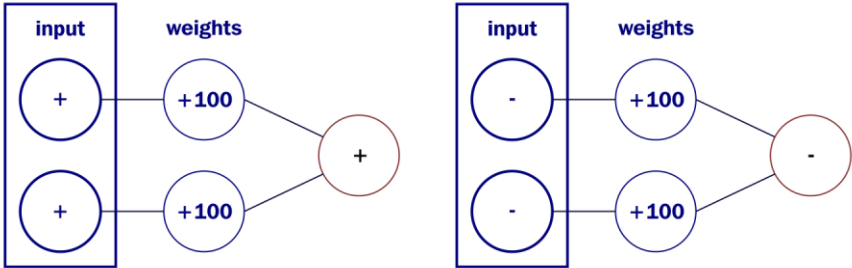
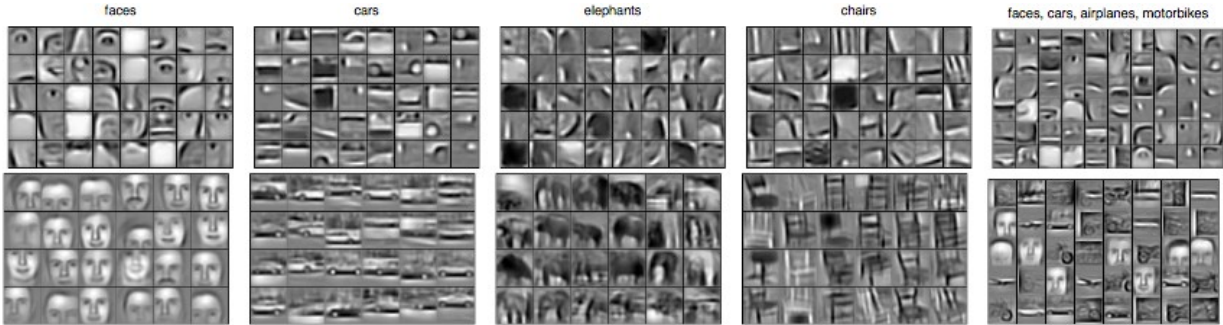
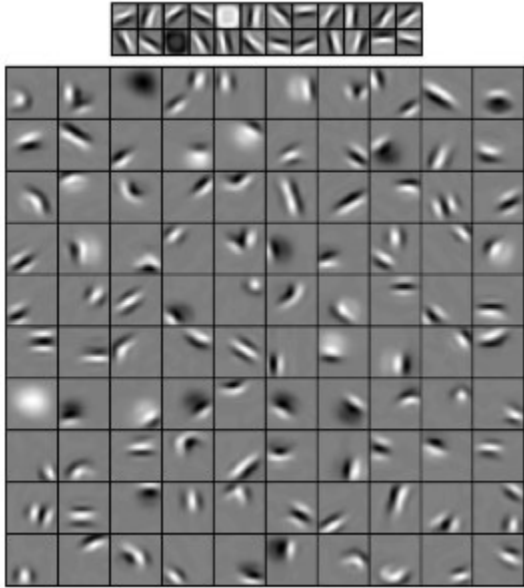


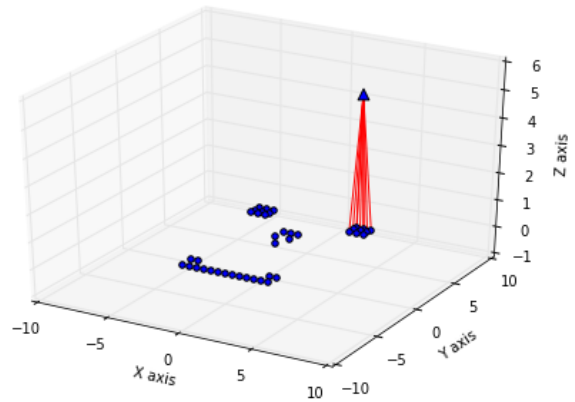
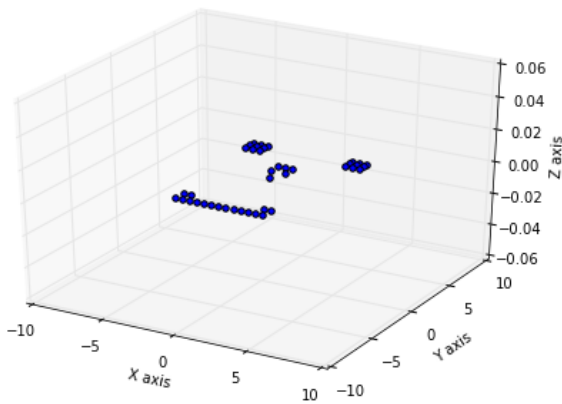
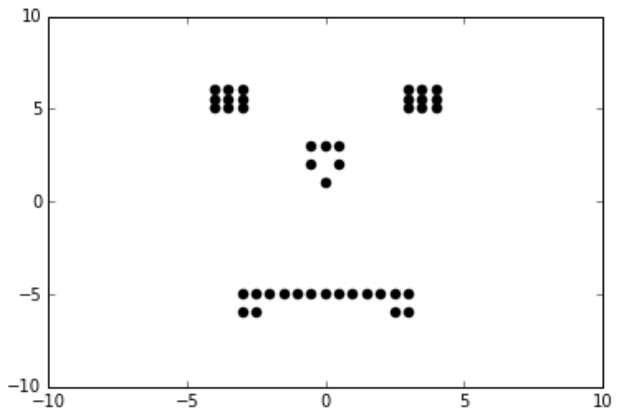
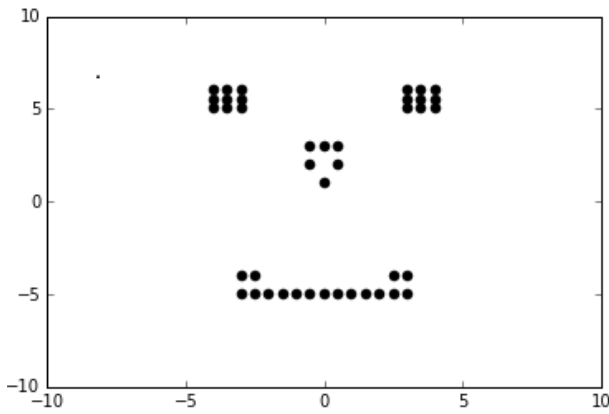
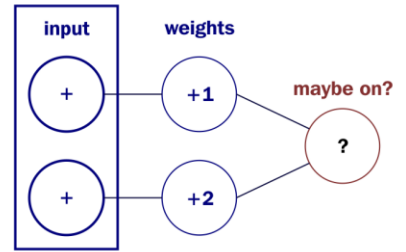
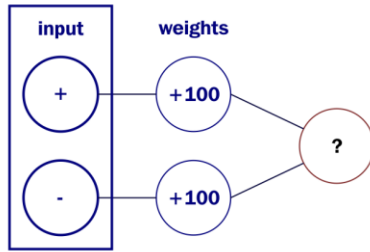
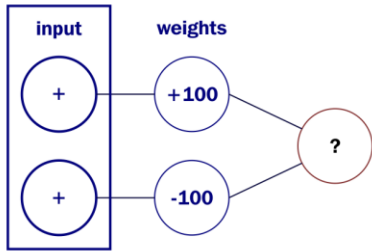
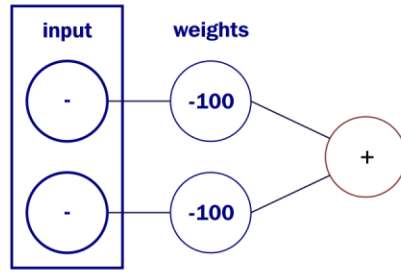
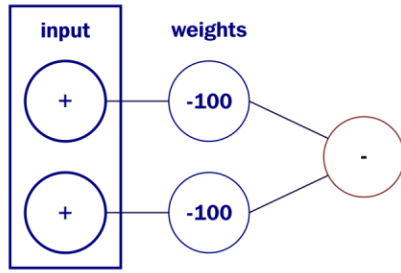


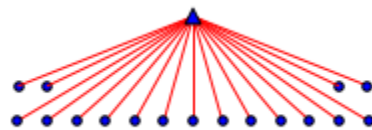
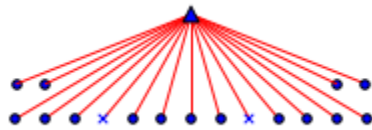
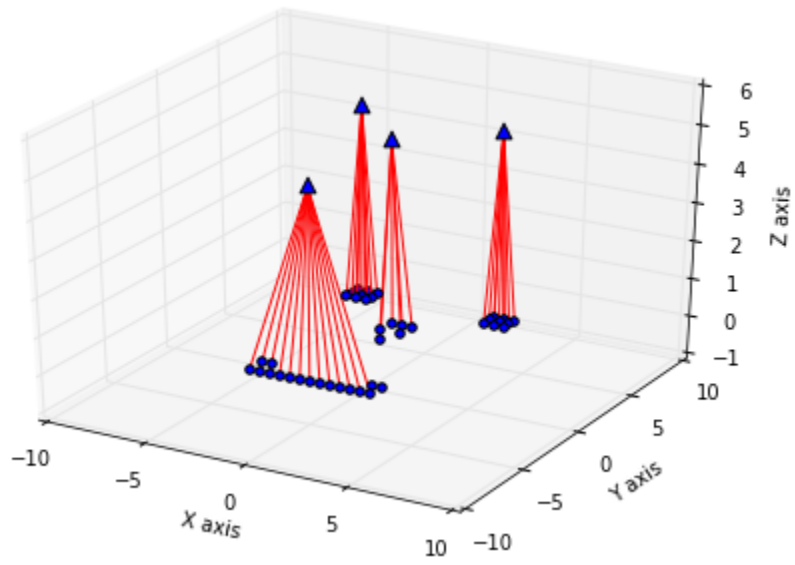




# Chapter 3: Deep Learning Fundamentals

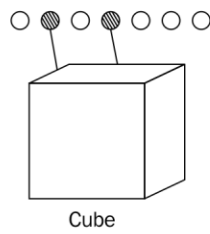
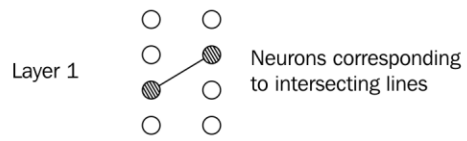
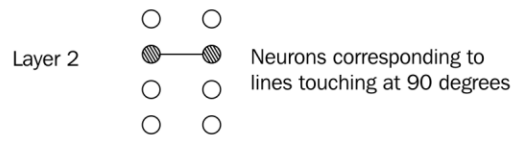
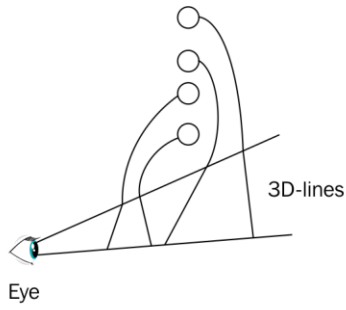


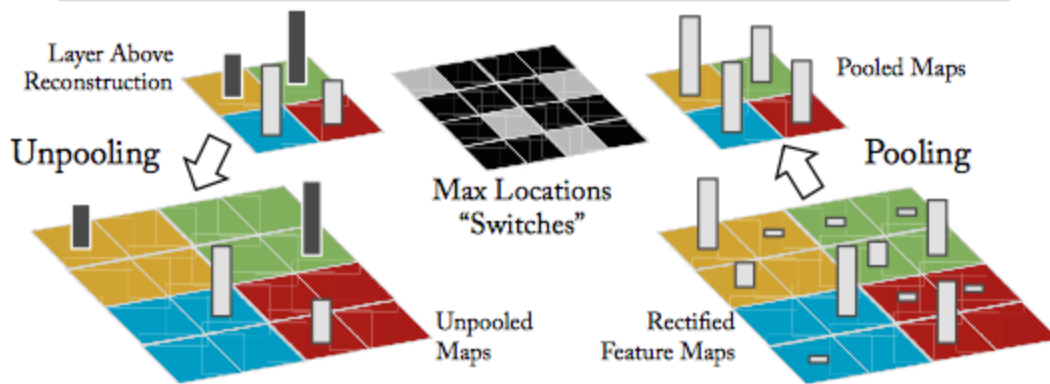
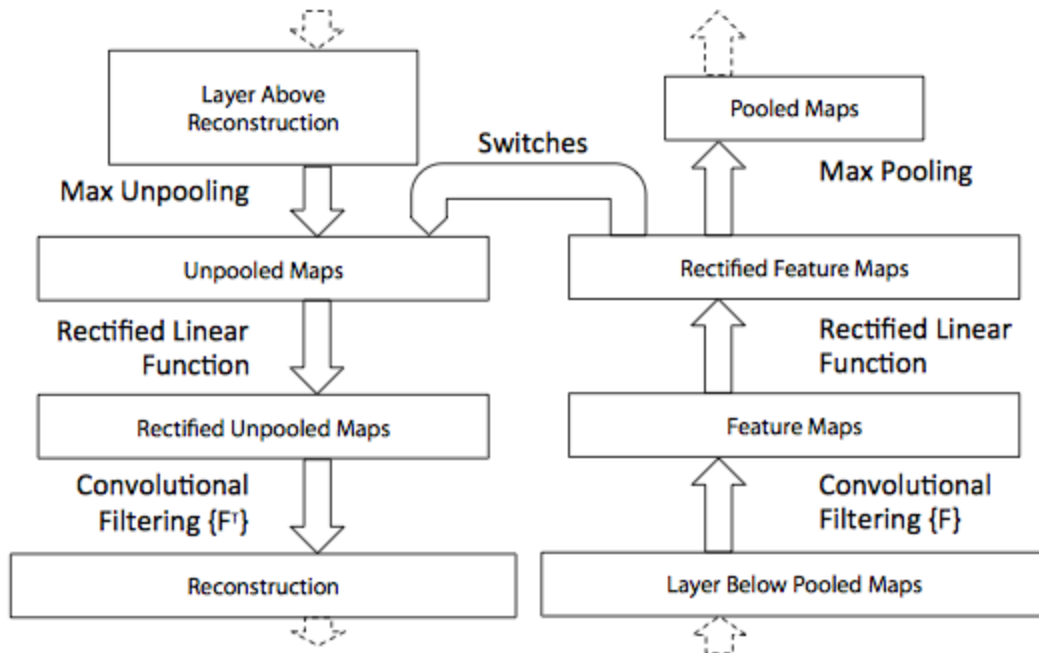


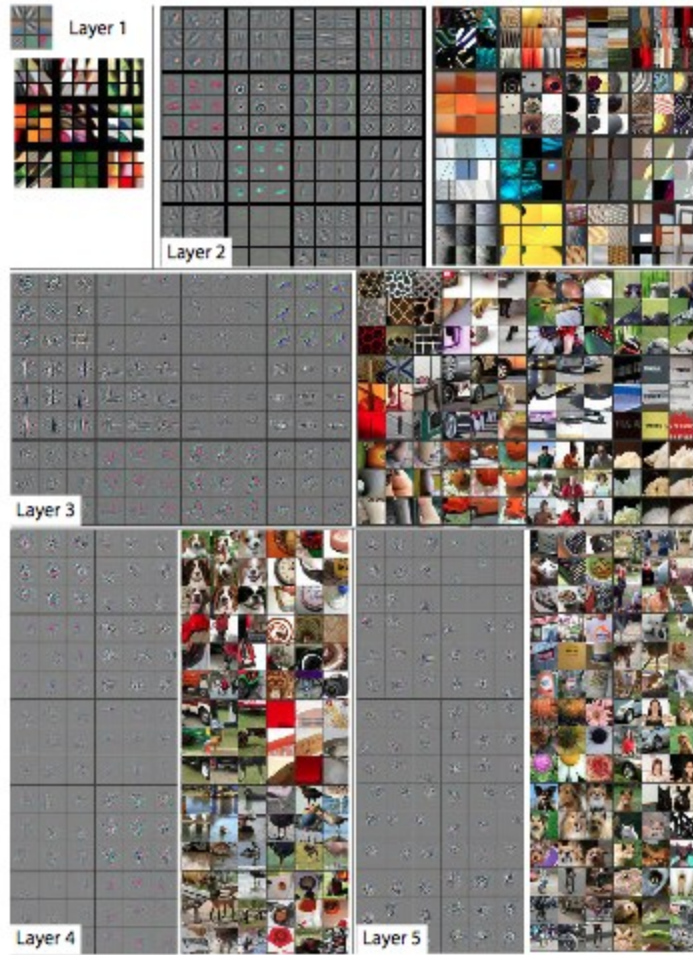




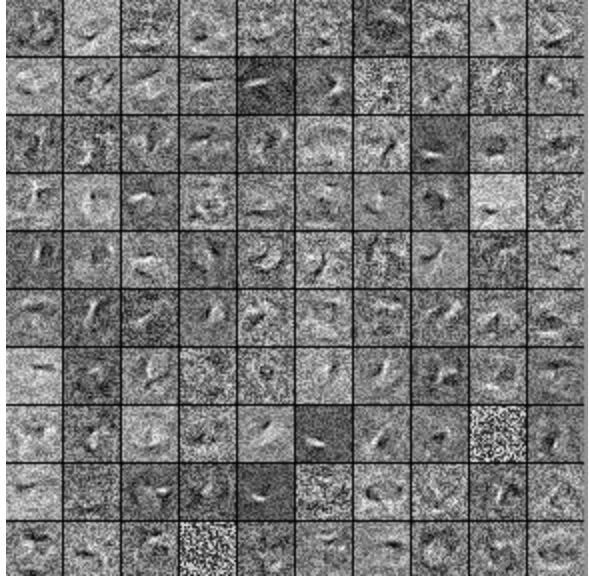
Neurons corresponding to the 3D lines projecting to the same 2D-line



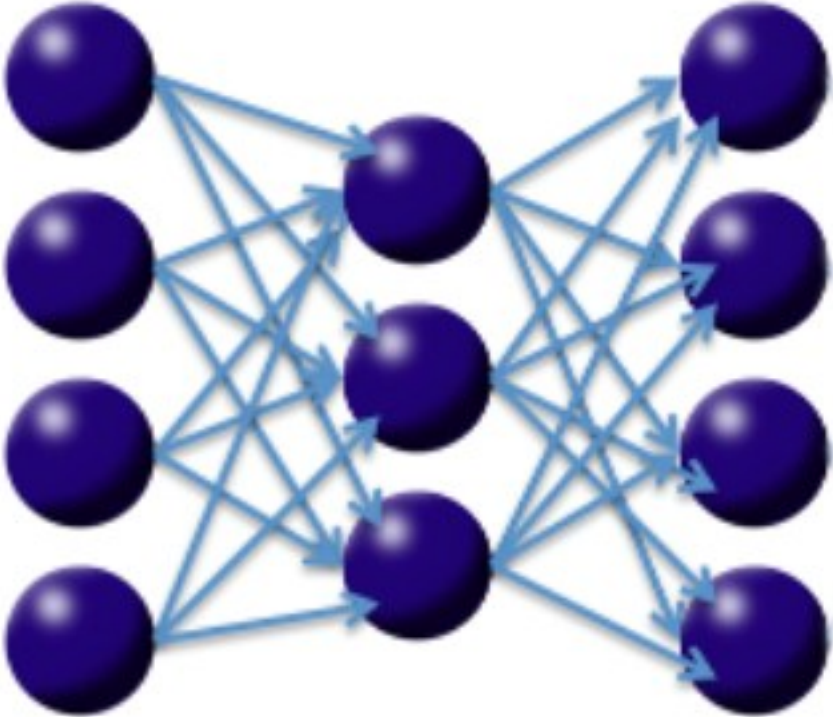


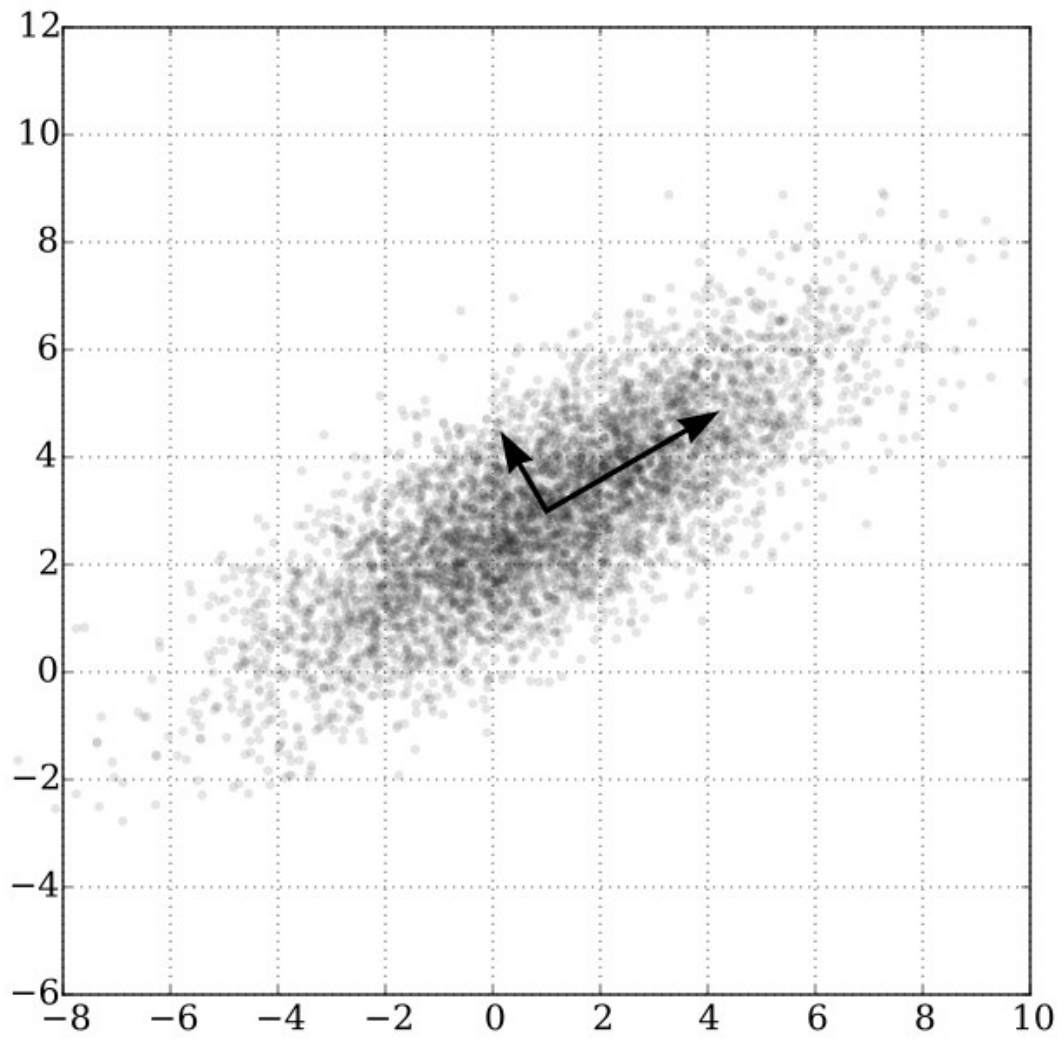


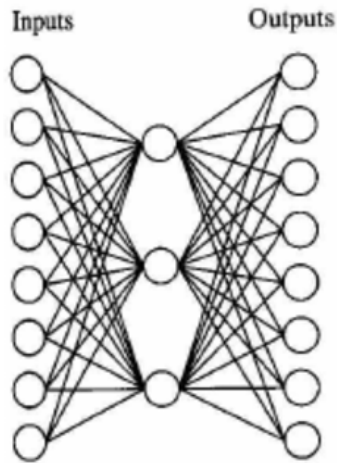
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3	5	3	6	1	7	2	8	6	9
4	0	9	1	1	2	4	3	2	7
3	8	6	9	0	5	6	0	7	6
1	8	7	9	3	9	8	5	9	3
3	0	7	4	9	8	0	9	4	1
4	4	6	0	4	5	6	7	0	0
1	7	1	6	3	0	2	1	1	7
8	0	2	6	7	8	3	9	0	4
6	7	4	6	8	0	7	8	3	1



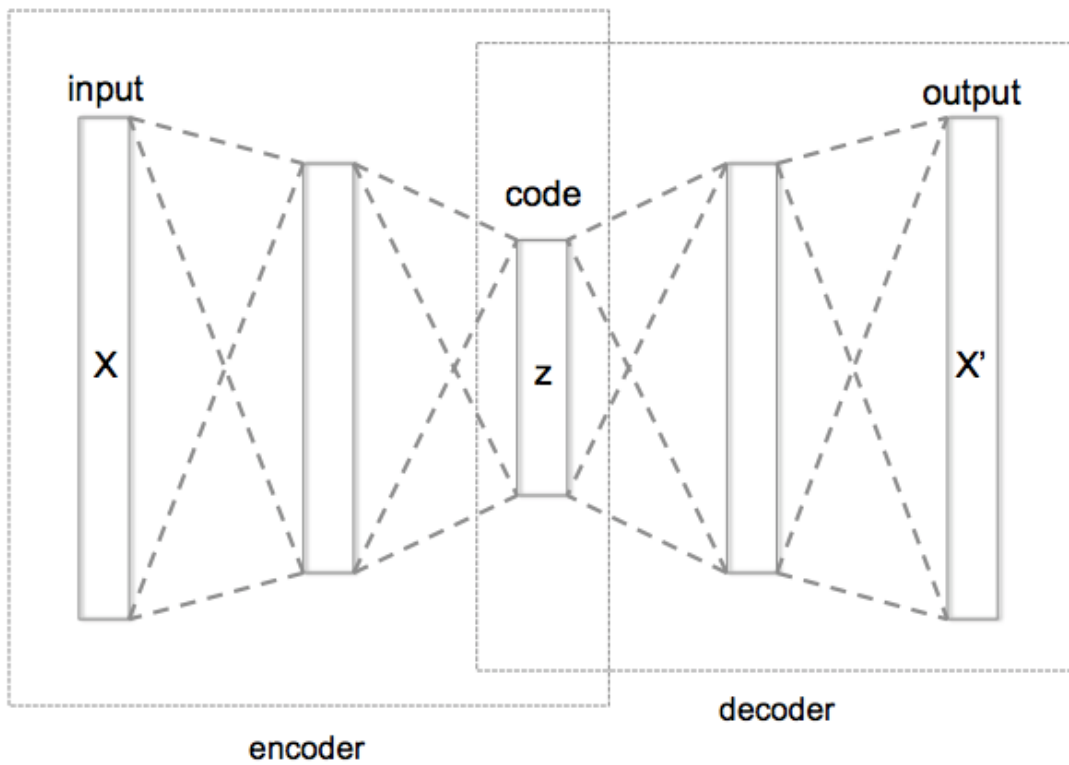
Chapter 4: Unsupervised Feature Learning



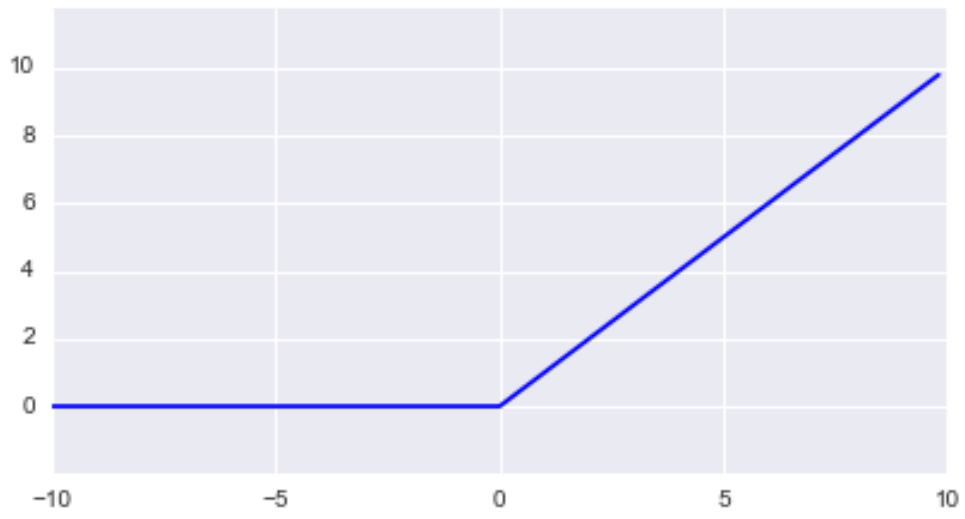




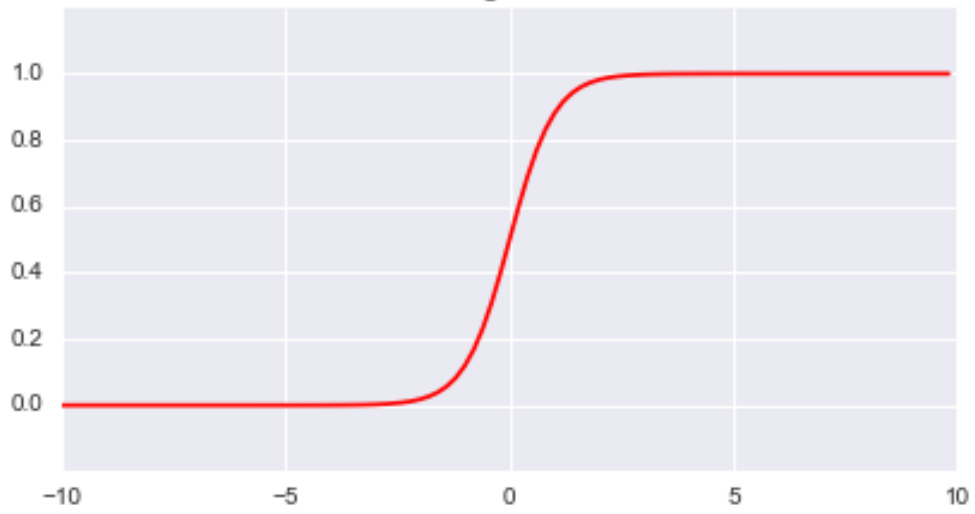
Input		Hidden Values		Output
10000000	→	.89 .04 .08	→	10000000
01000000	→	.15 .99 .99	→	01000000
00100000	→	.01 .97 .27	→	00100000
00010000	→	.99 .97 .71	→	00010000
00001000	→	.03 .05 .02	→	00001000
00000100	→	.01 .11 .88	→	00000100
00000010	→	.80 .01 .98	→	00000010
00000001	→	.60 .94 .01	→	00000001



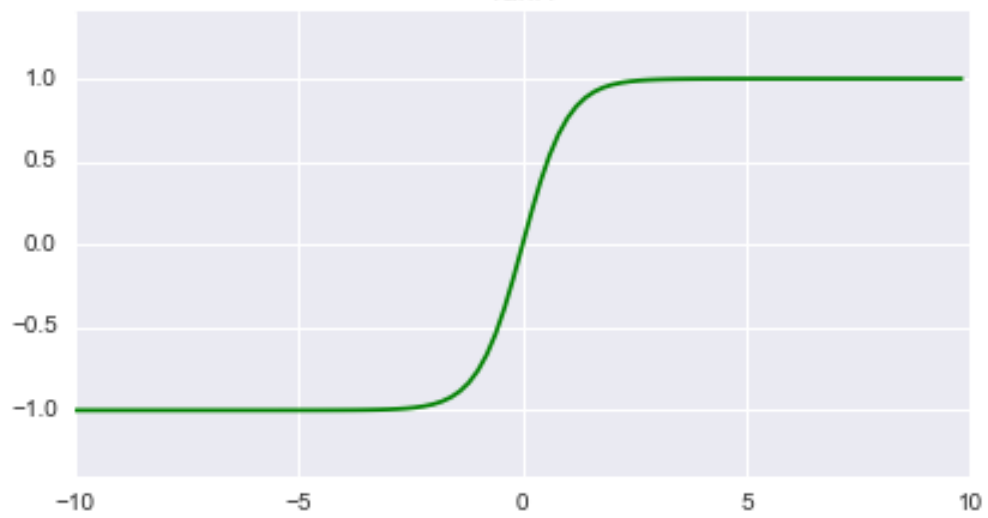
ReLU



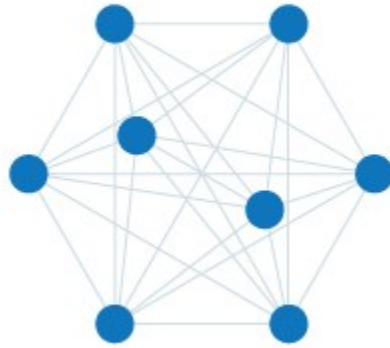
Sigmoid



TanH







## RECONSTRUCTION

ORIGINAL

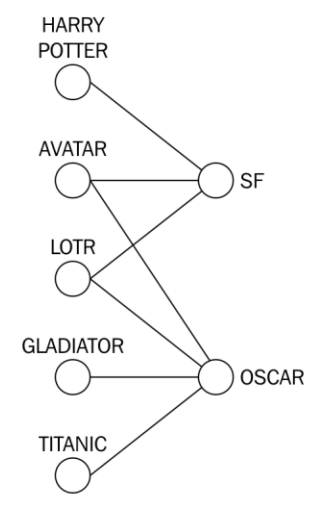
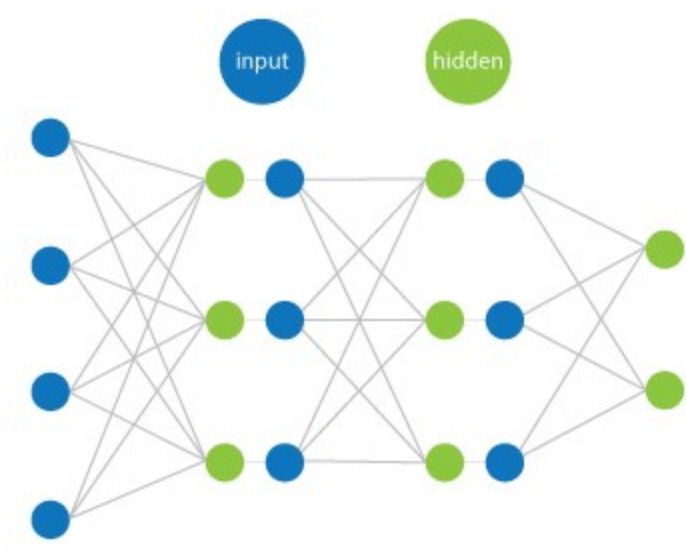
10 hidden nodes

30 hidden nodes

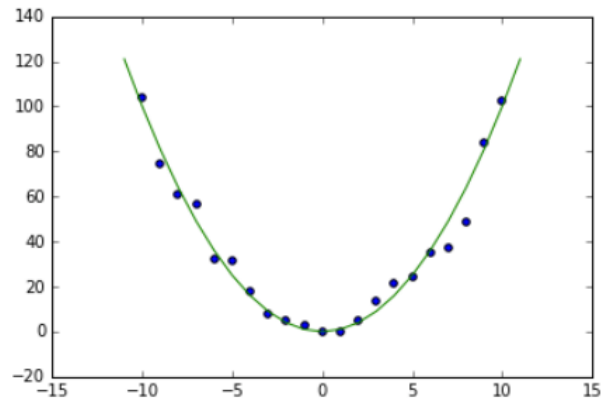
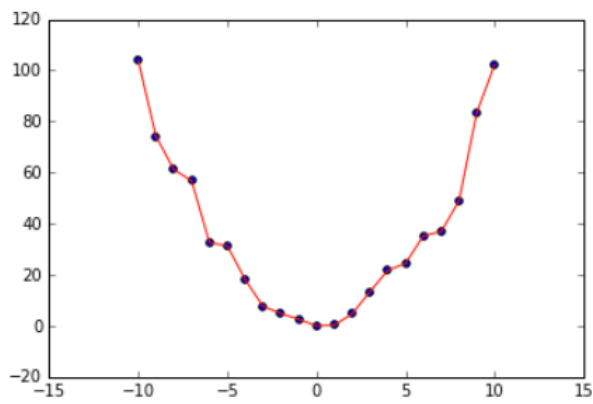
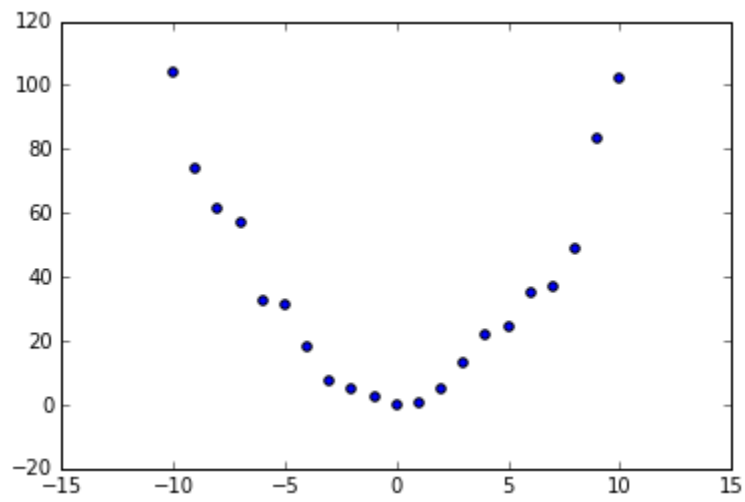
100 hidden nodes

300 hidden nodes

1	1	1	1	1
2	3	2	2	2
3	0	8	8	3
4	9	9	9	4
5	8	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	9	9	8
9	9	9	9	9
0	0	0	0	0



## Chapter 5: Image Recognition

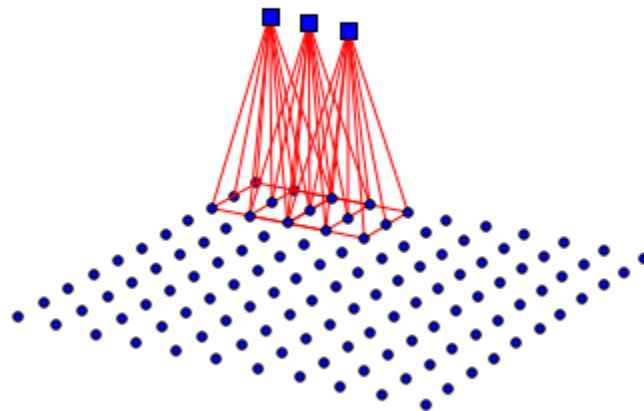
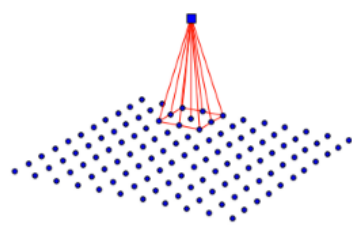
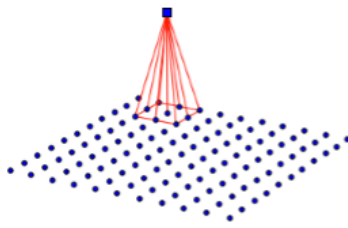
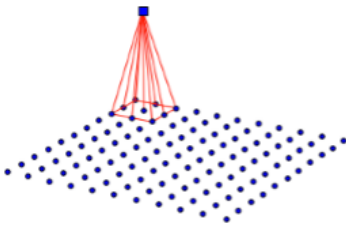
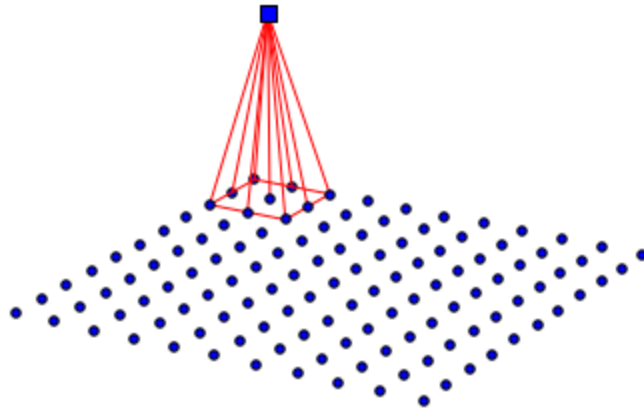


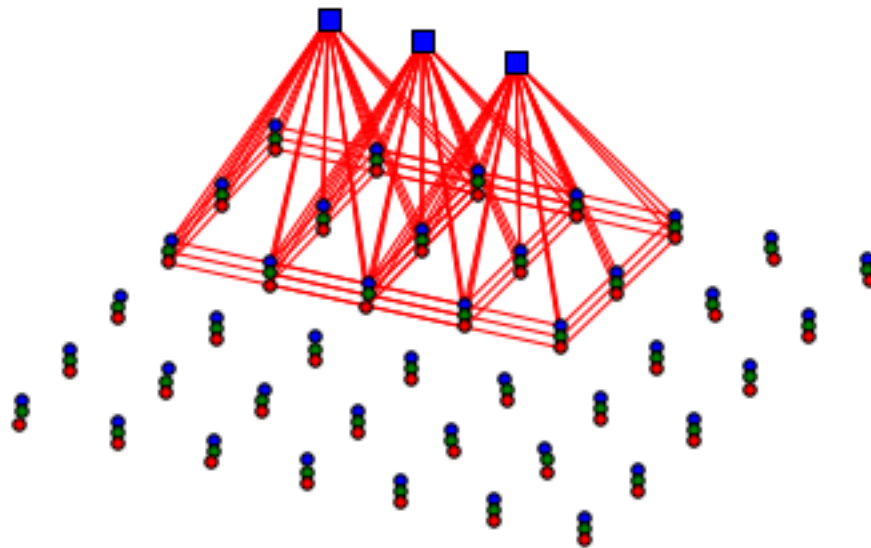
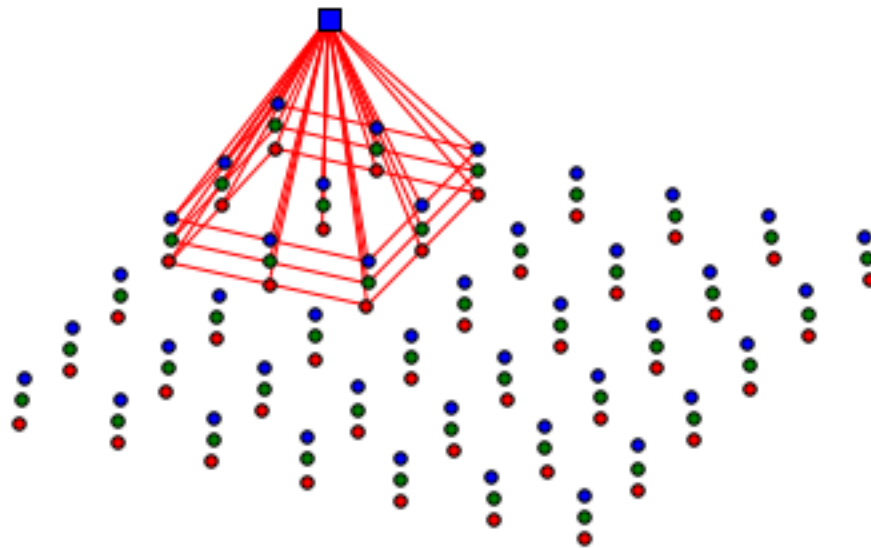
5 0 4 9 3

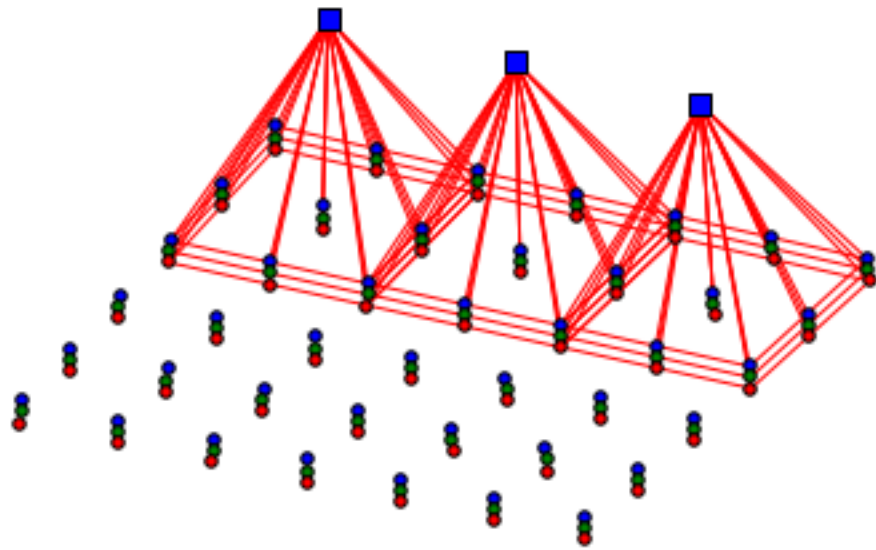
5 0 4 9 3

5 0 4 9 3

5 0 4 9 3









4	6
8	1

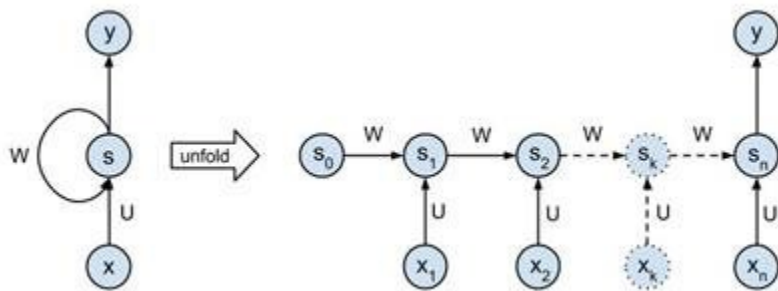
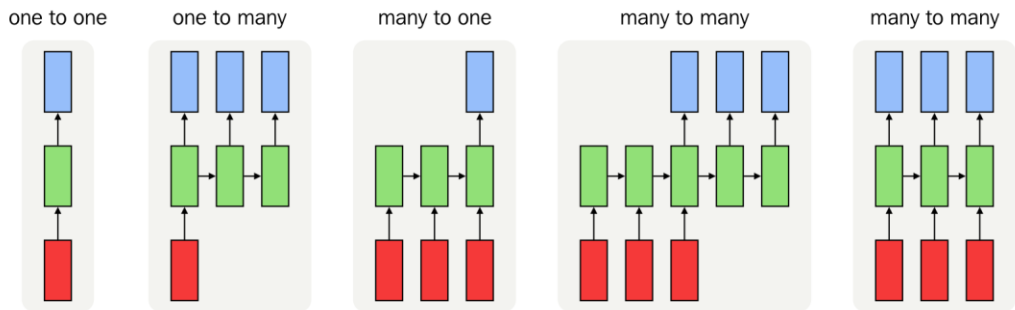
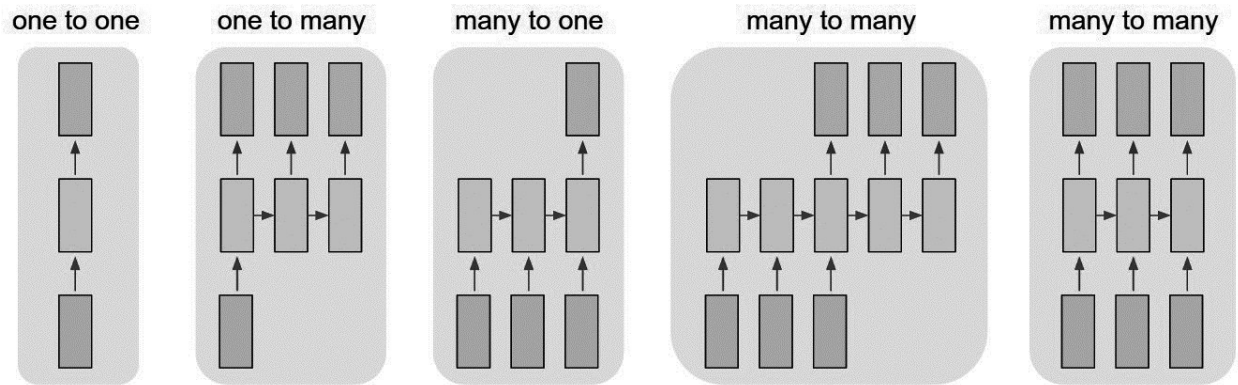


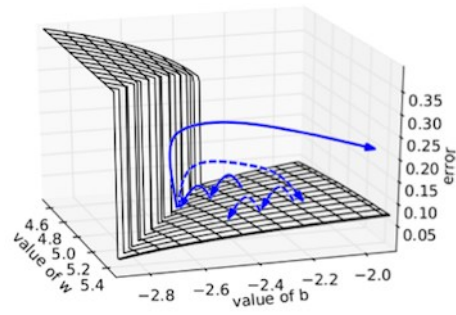
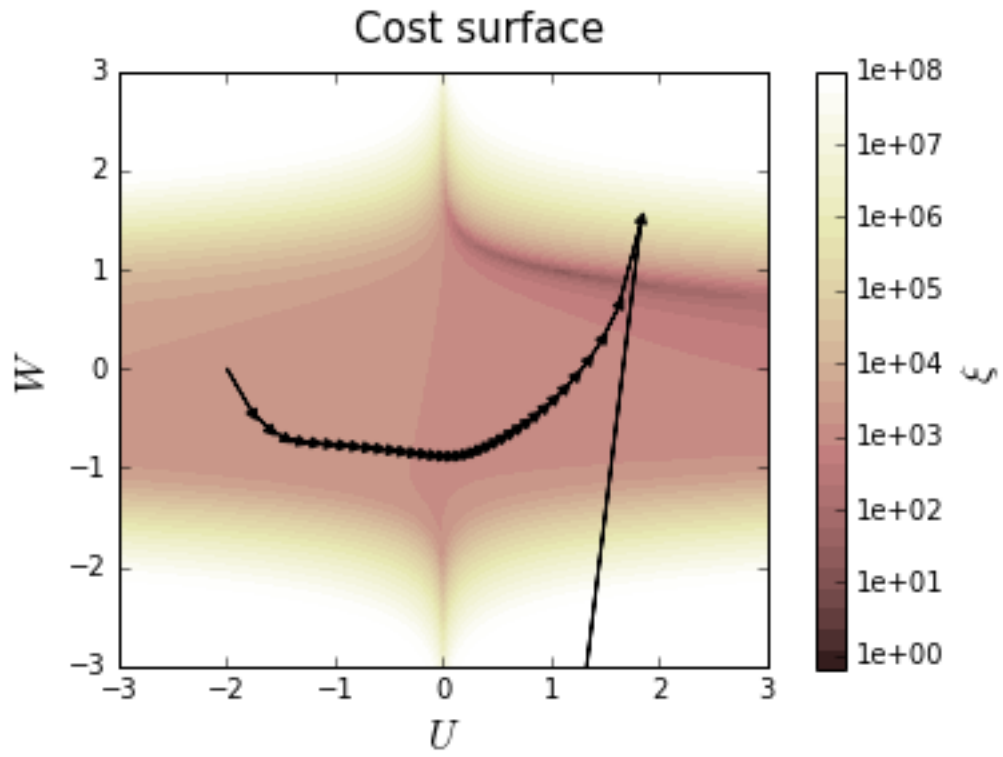
3	4	2	5
0	1	0	6
2	0	1	1
7	8	0	1

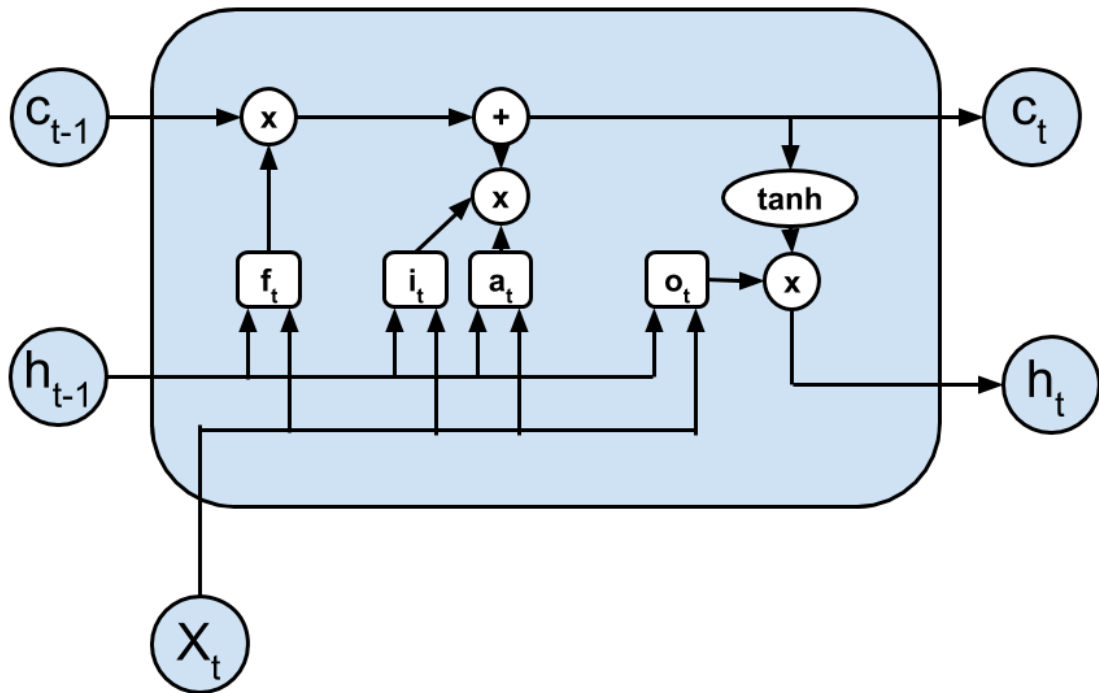
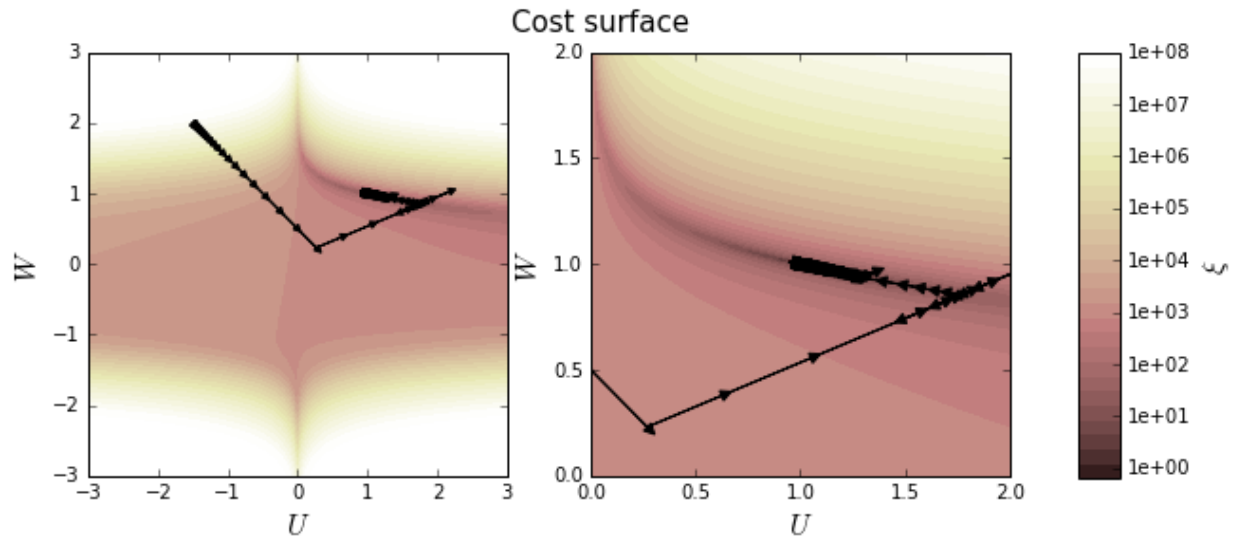


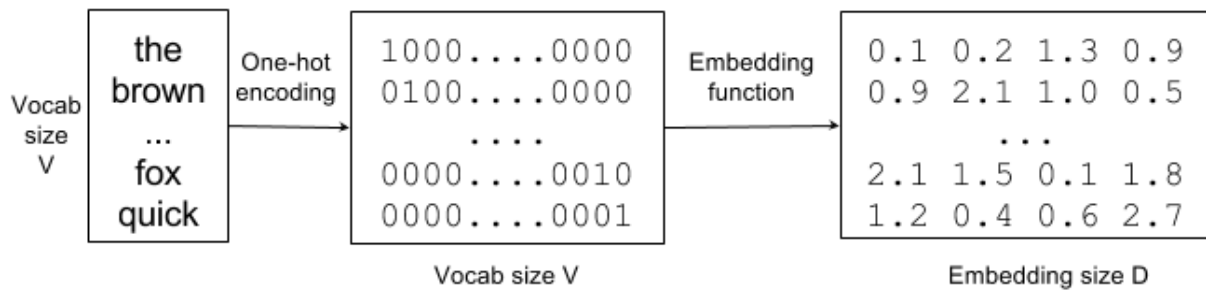
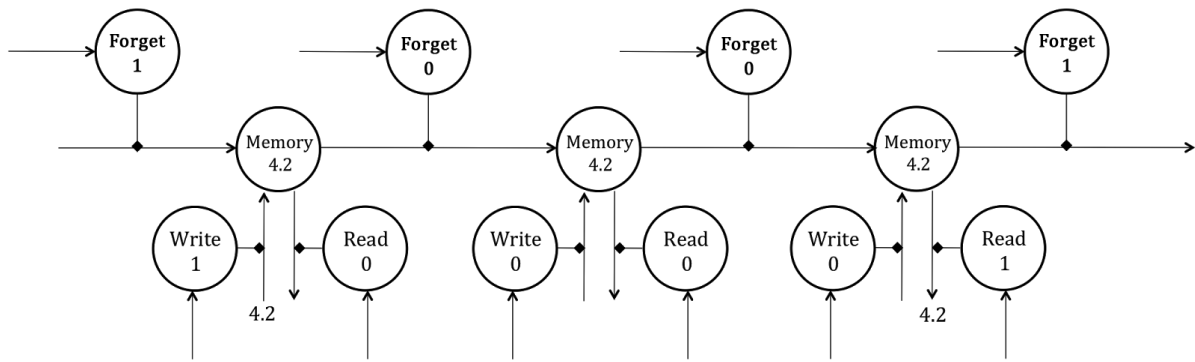


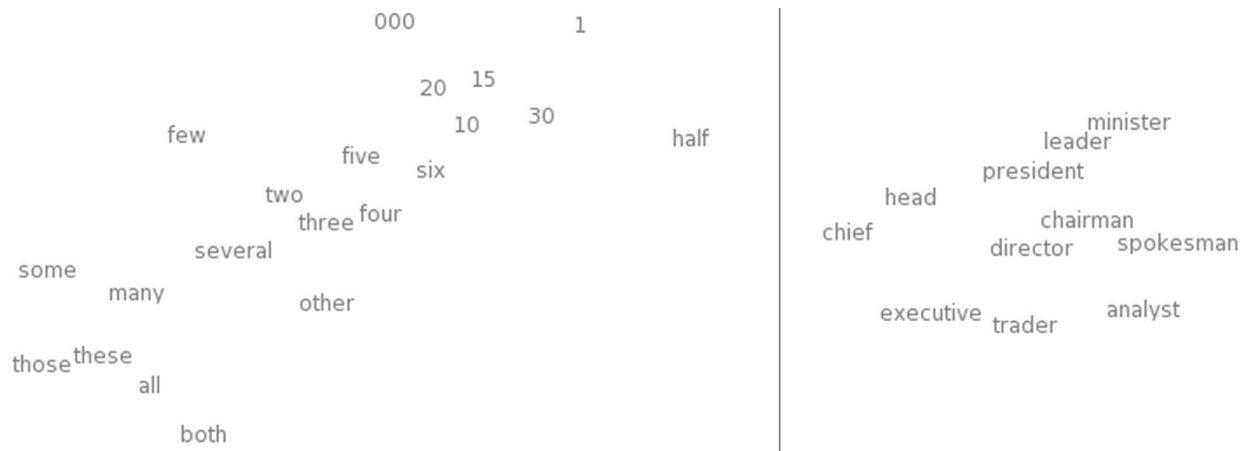
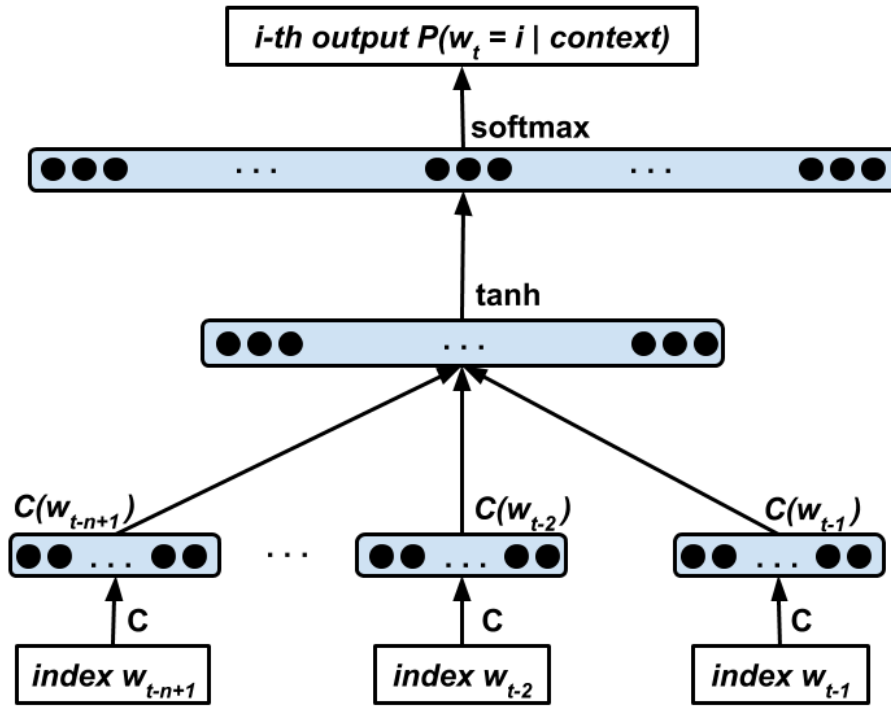
# Chapter 6: Recurrent Neural Networks and Language Models





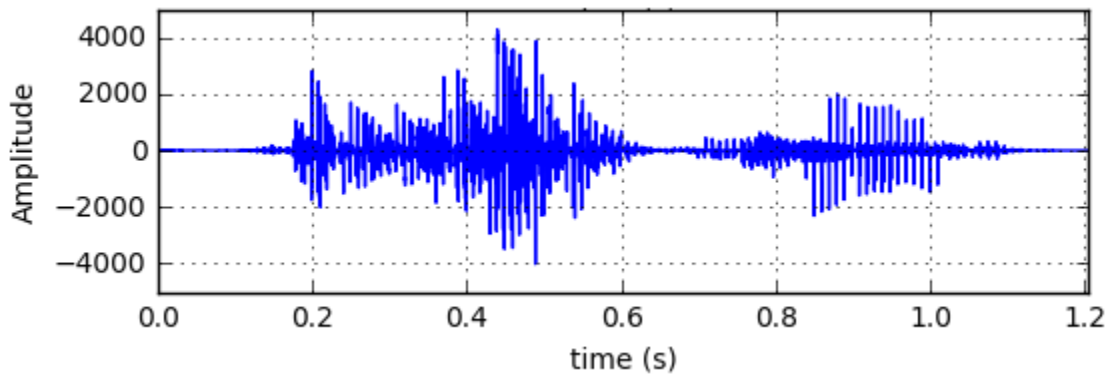
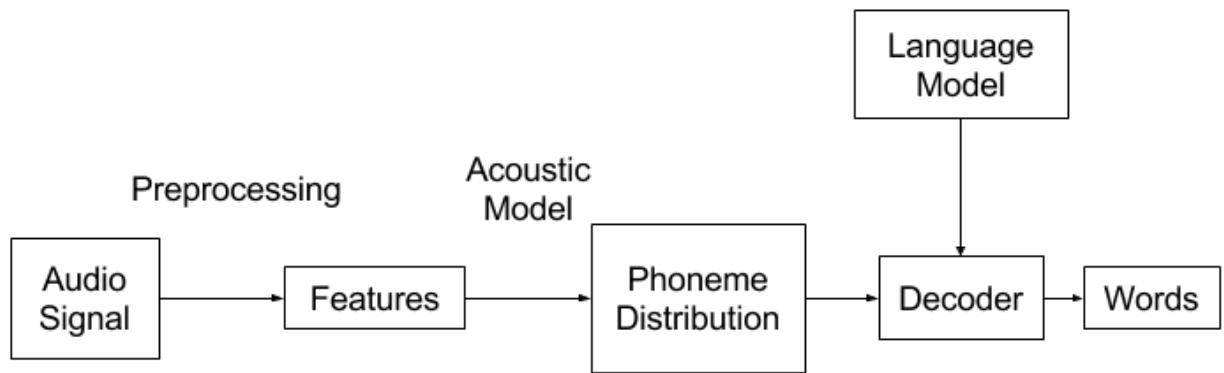
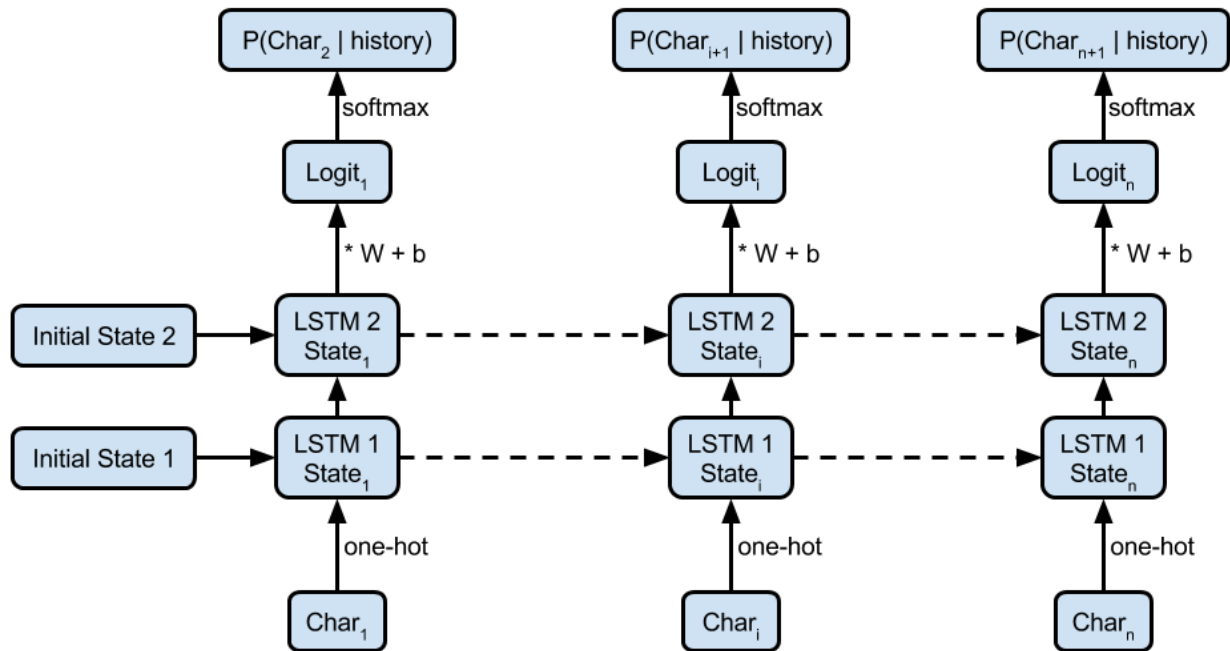


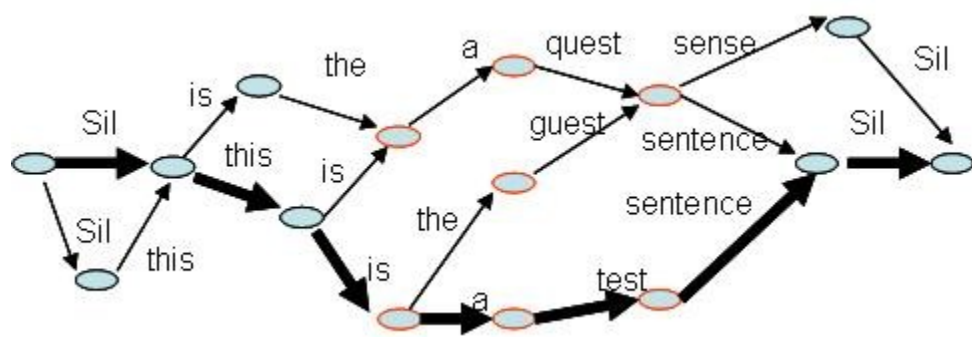
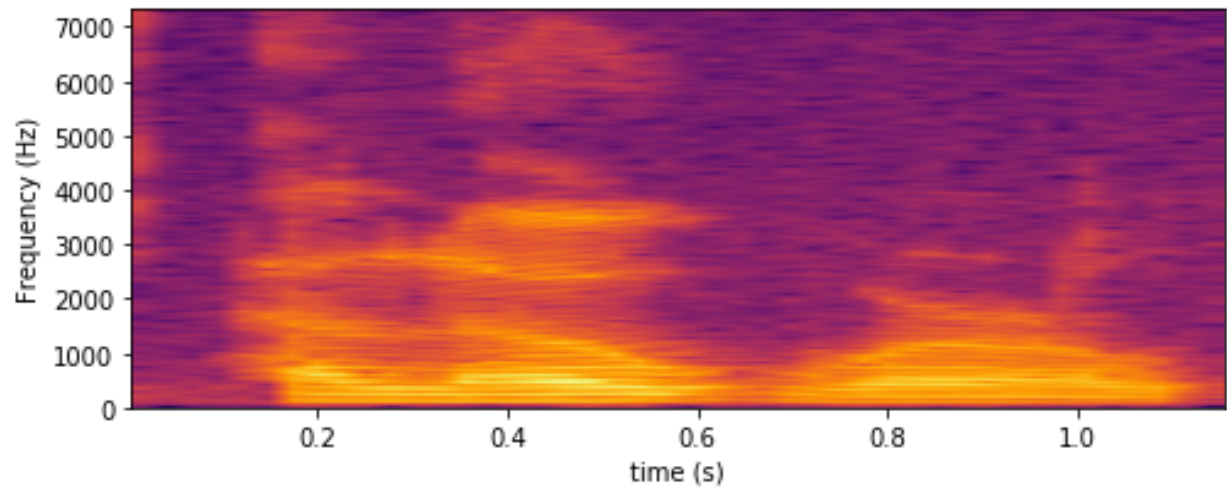




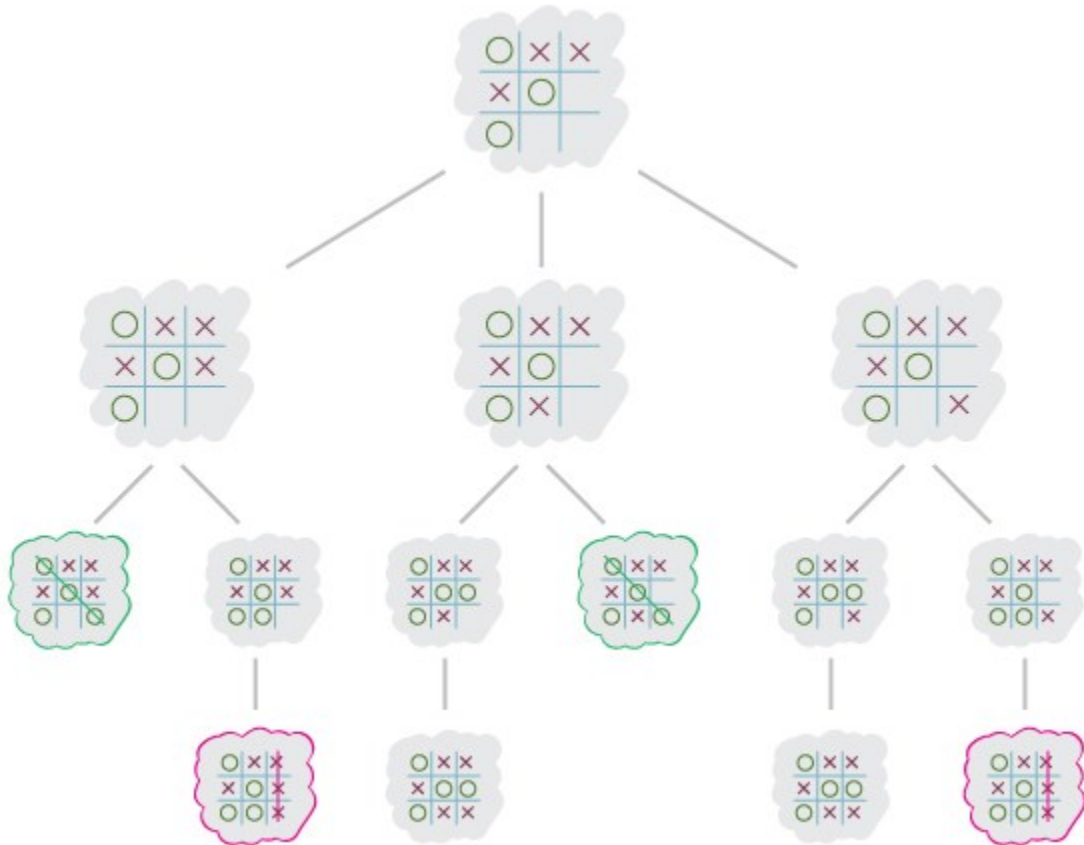
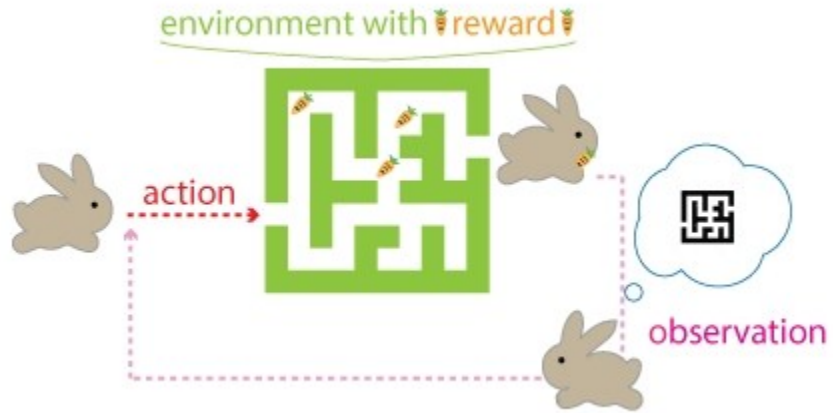


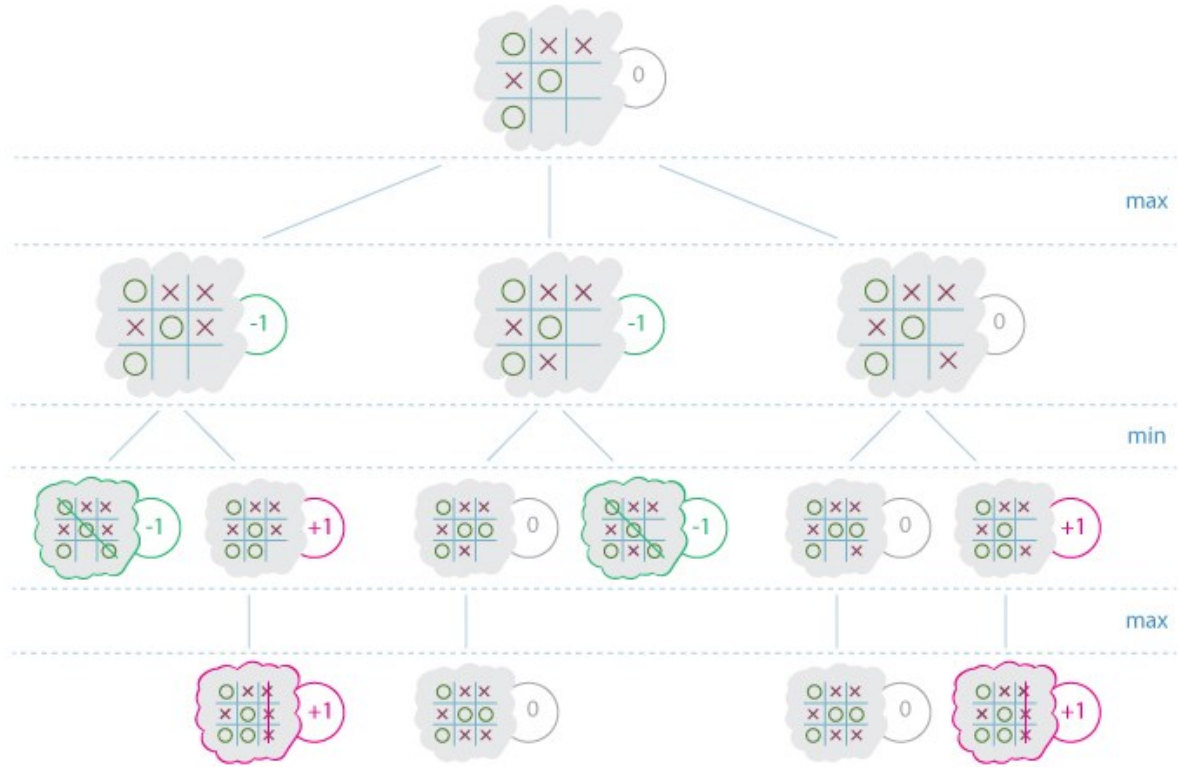


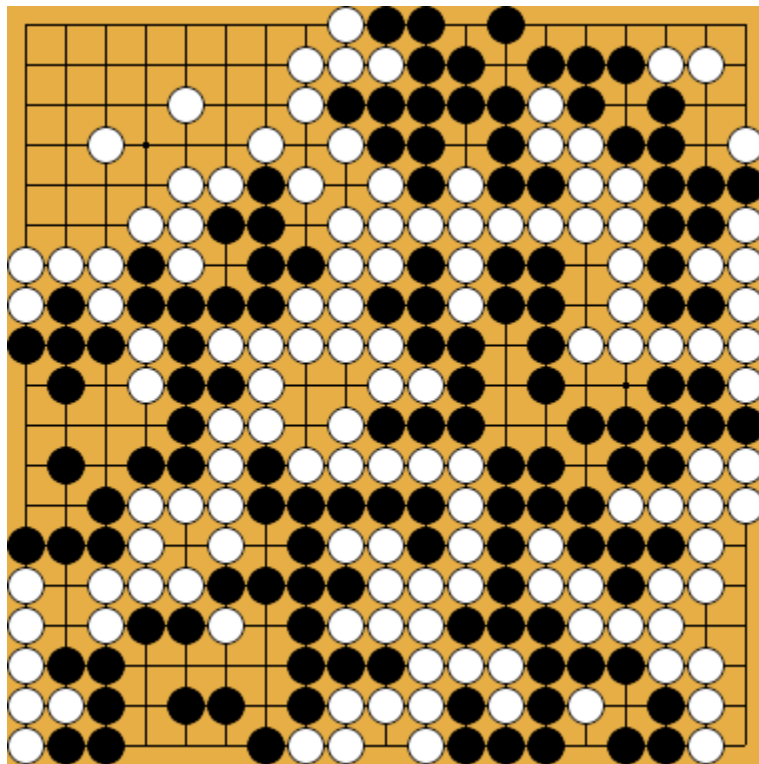
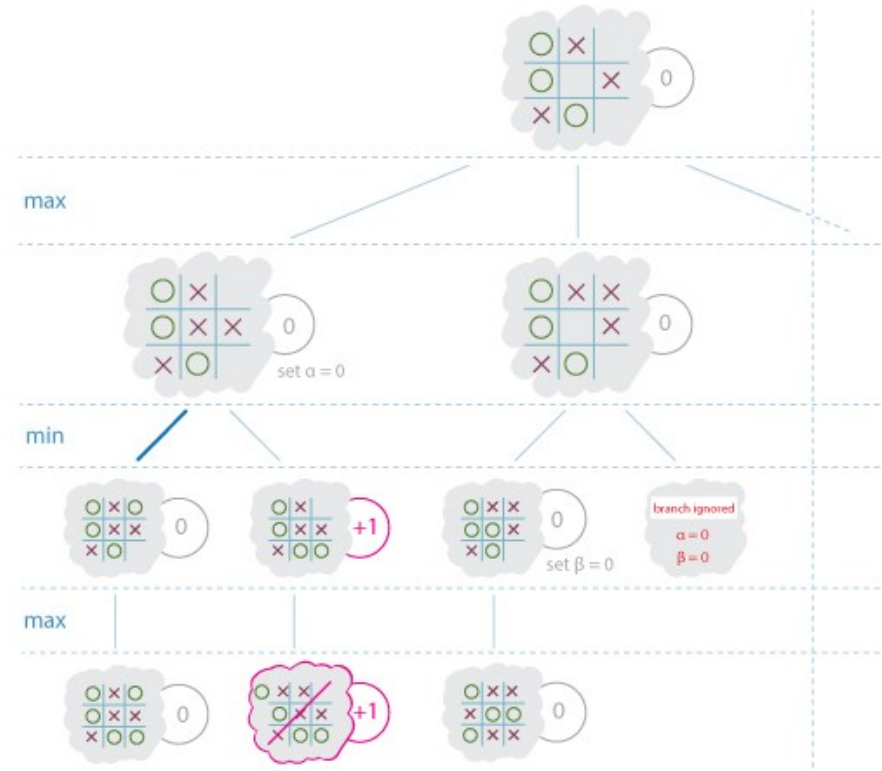


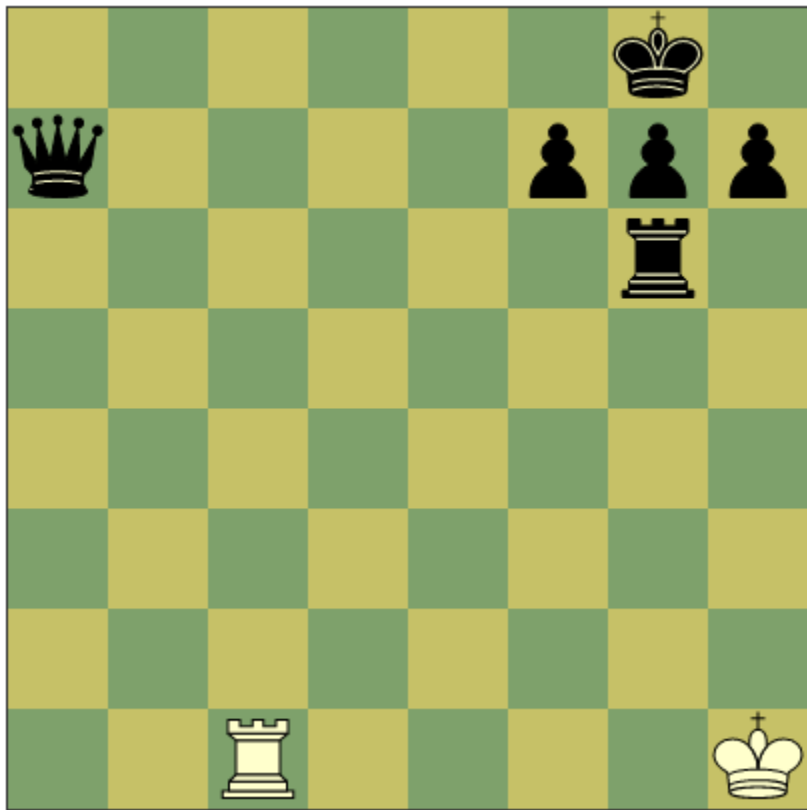


# Chapter 7: Deep Learning for Board Games

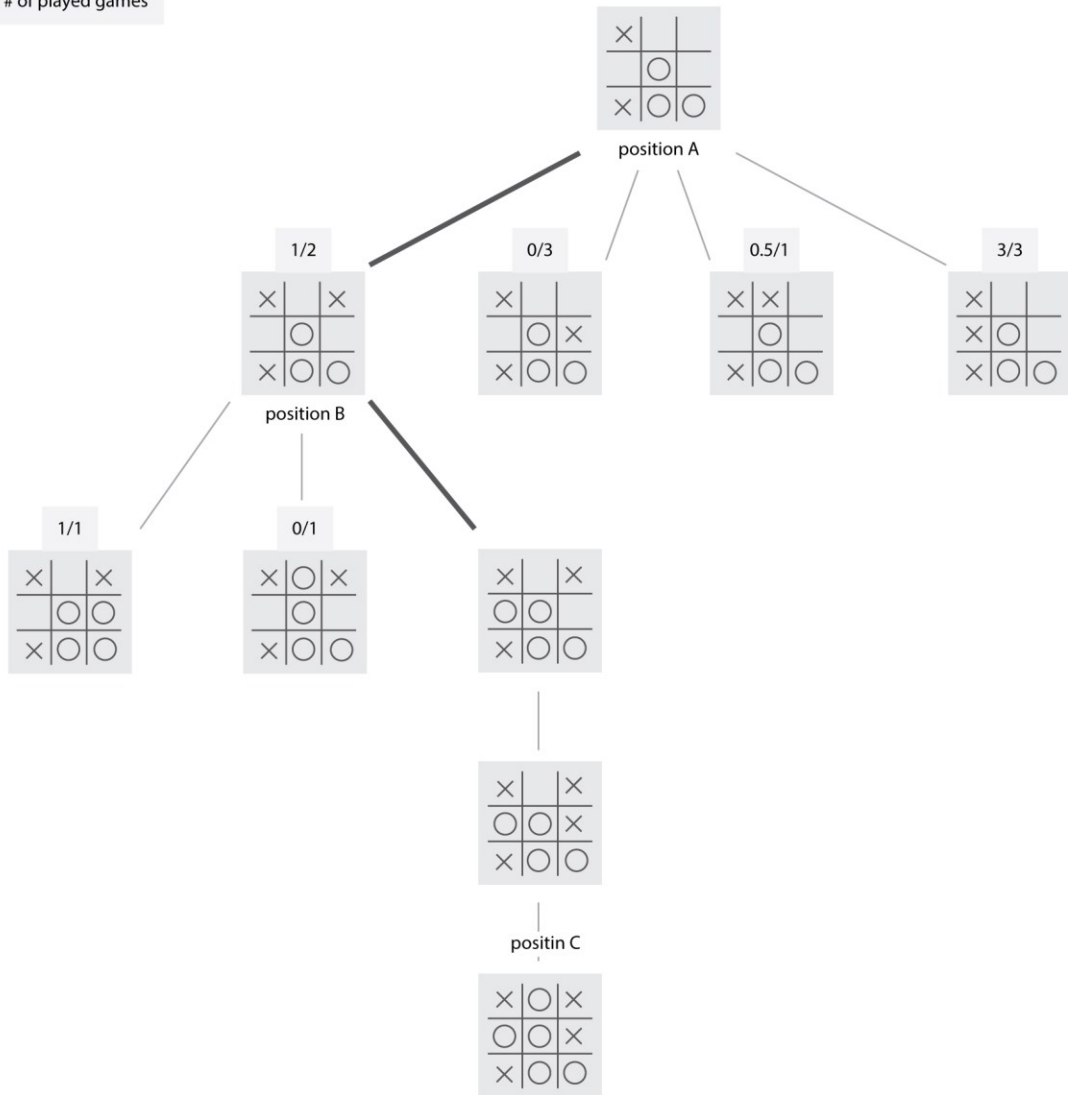


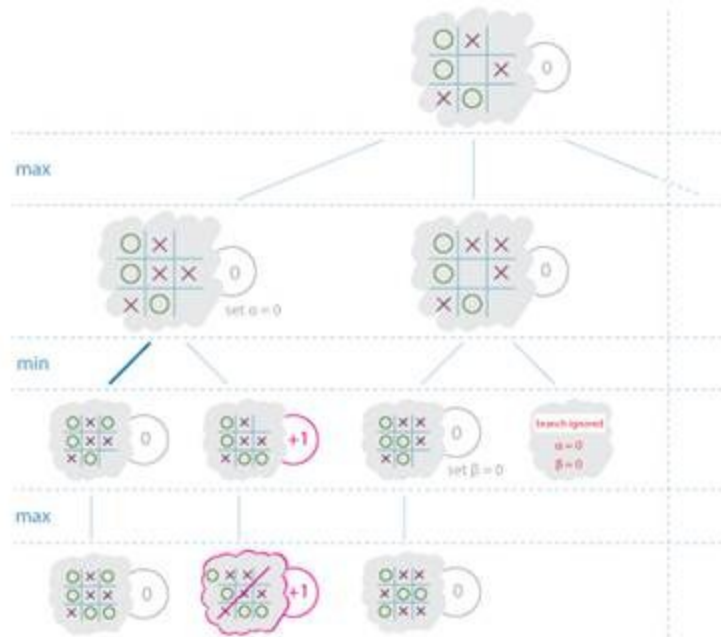




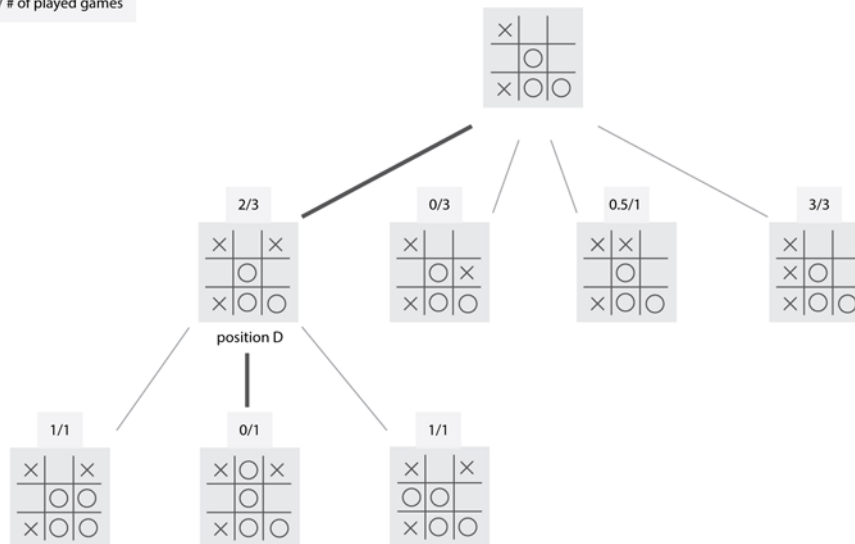


results/ # of played games

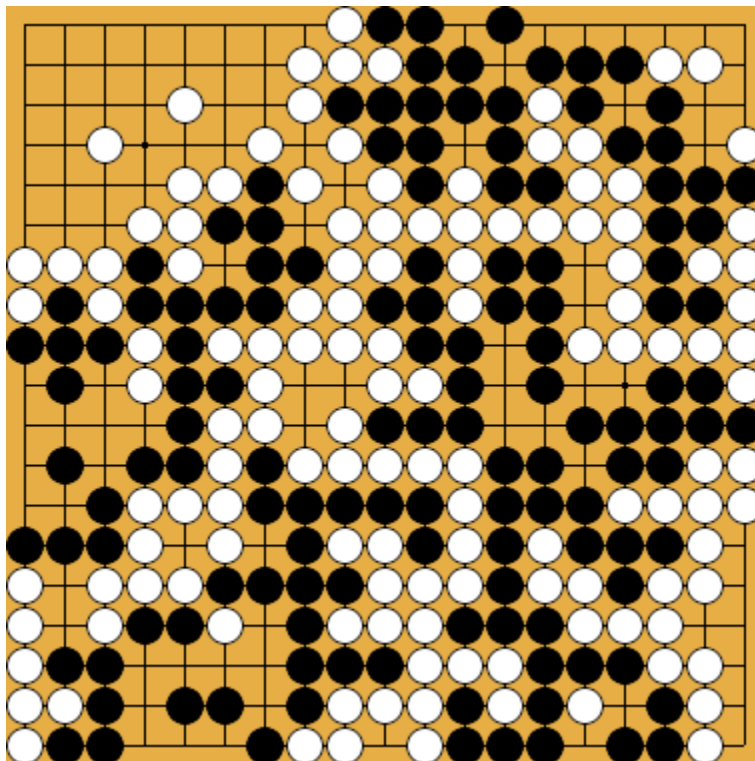
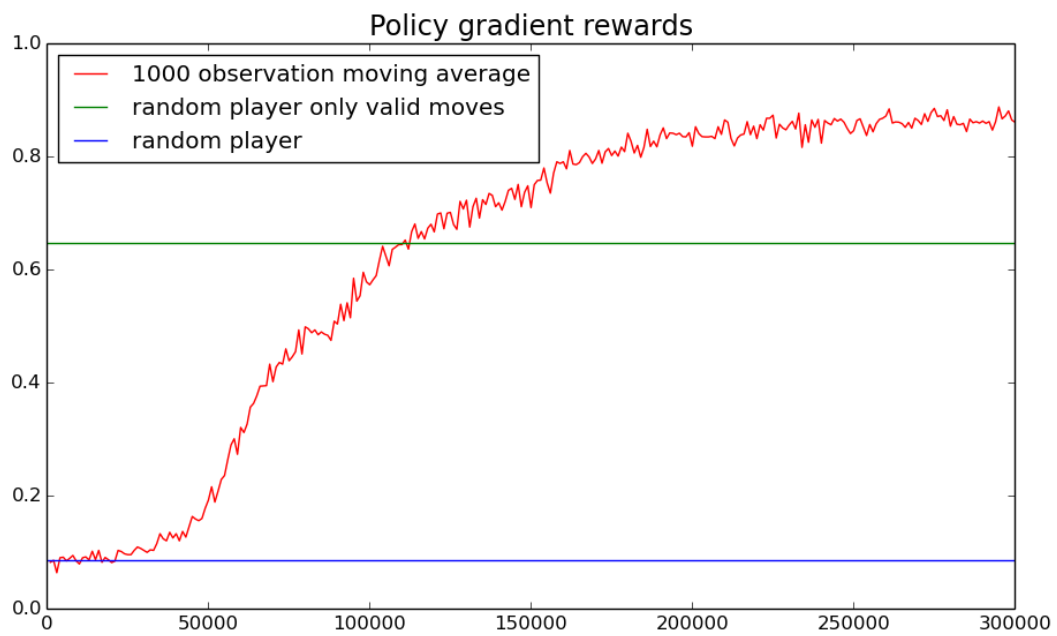


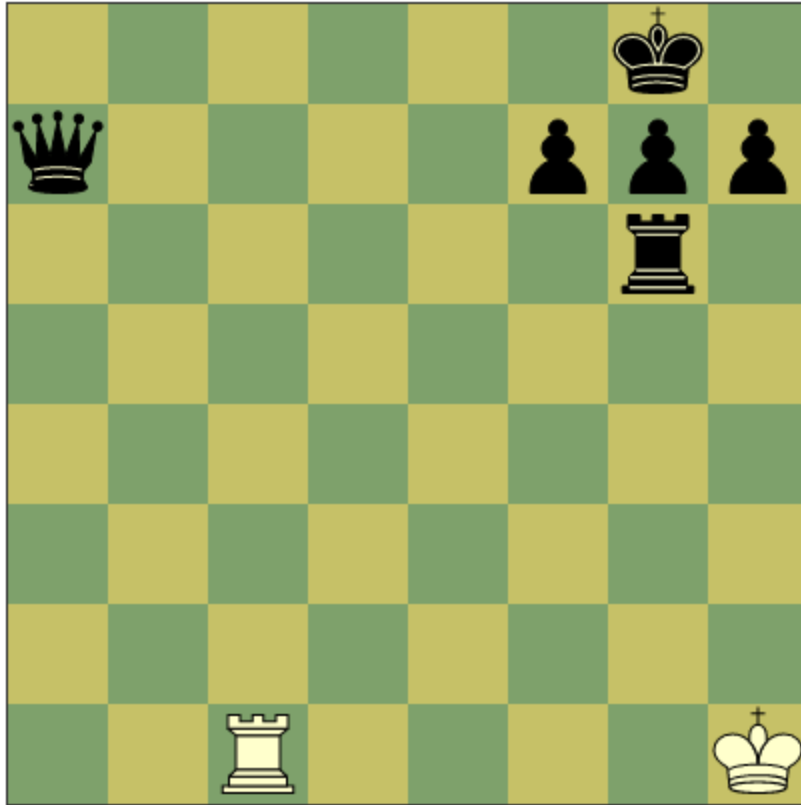


results/ # of played games

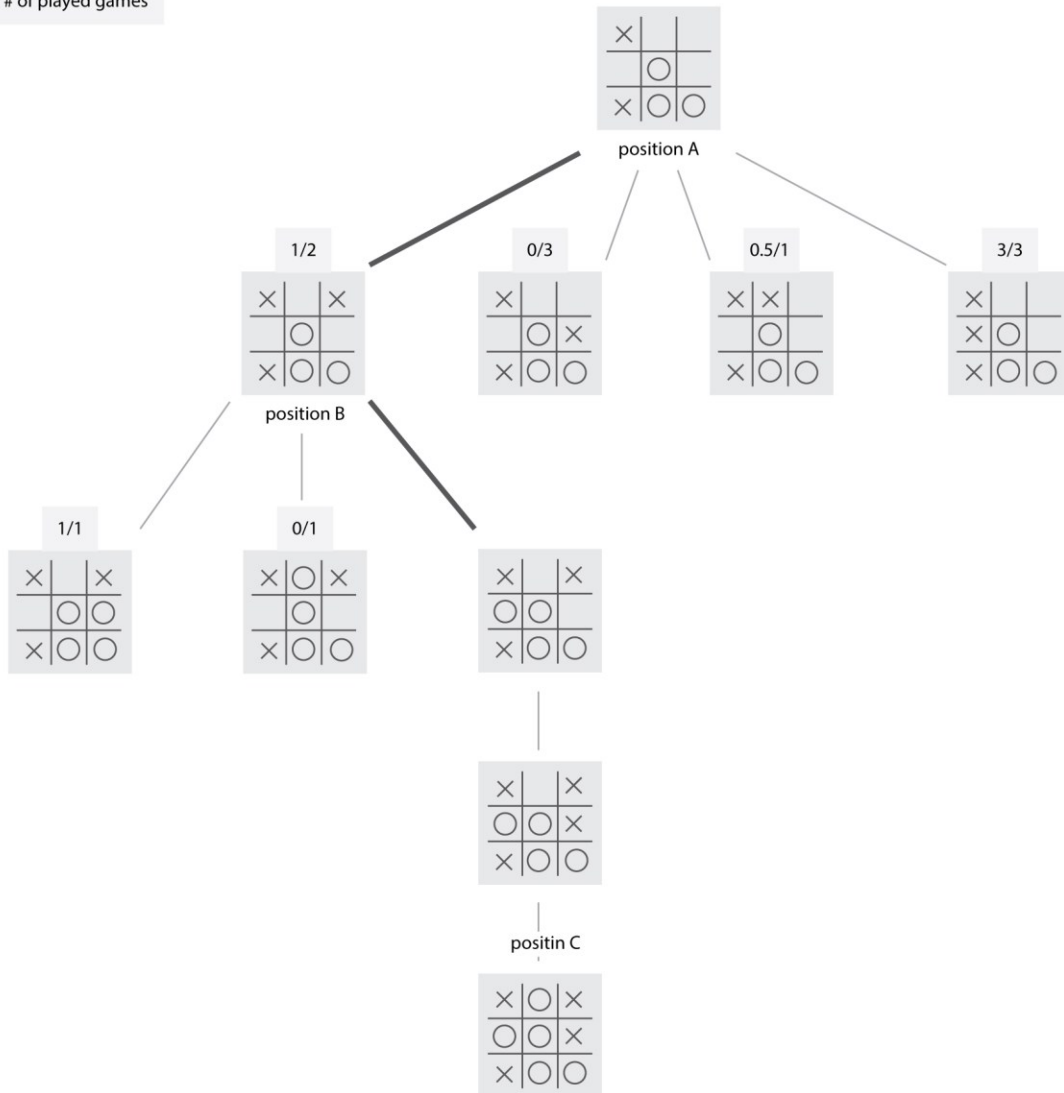




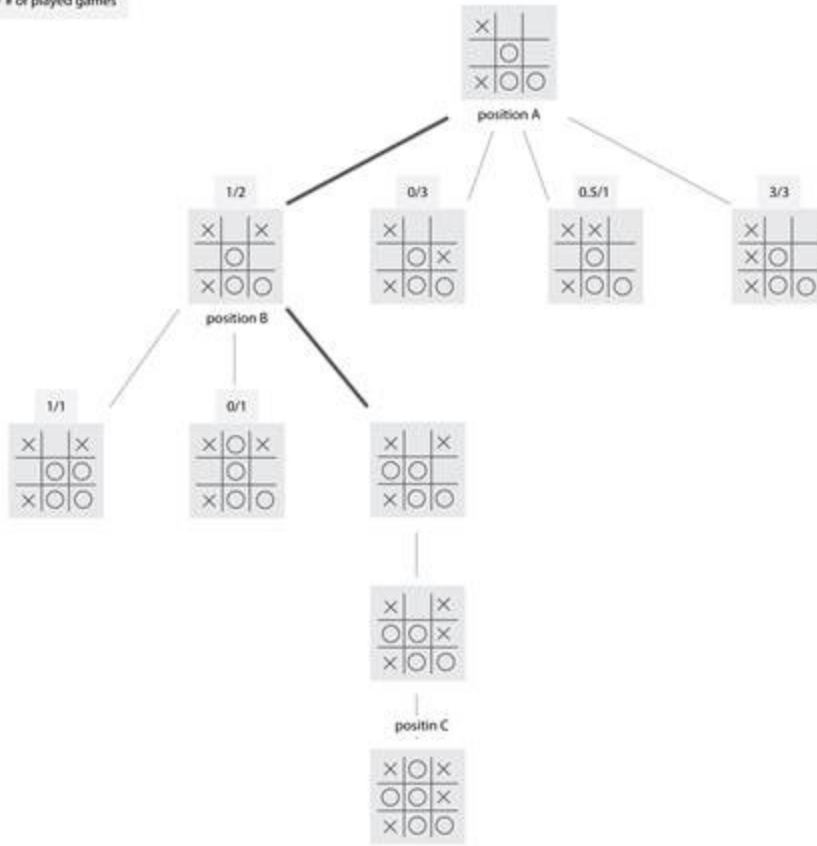




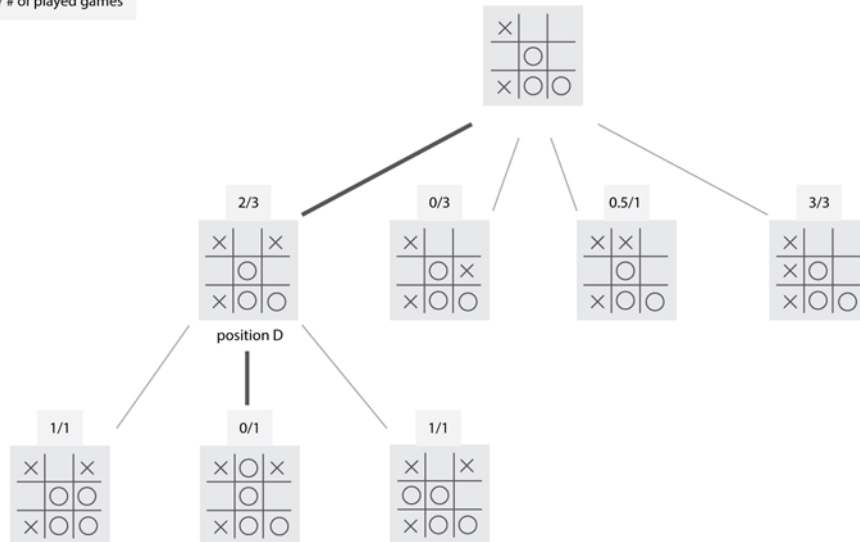
results/ # of played games

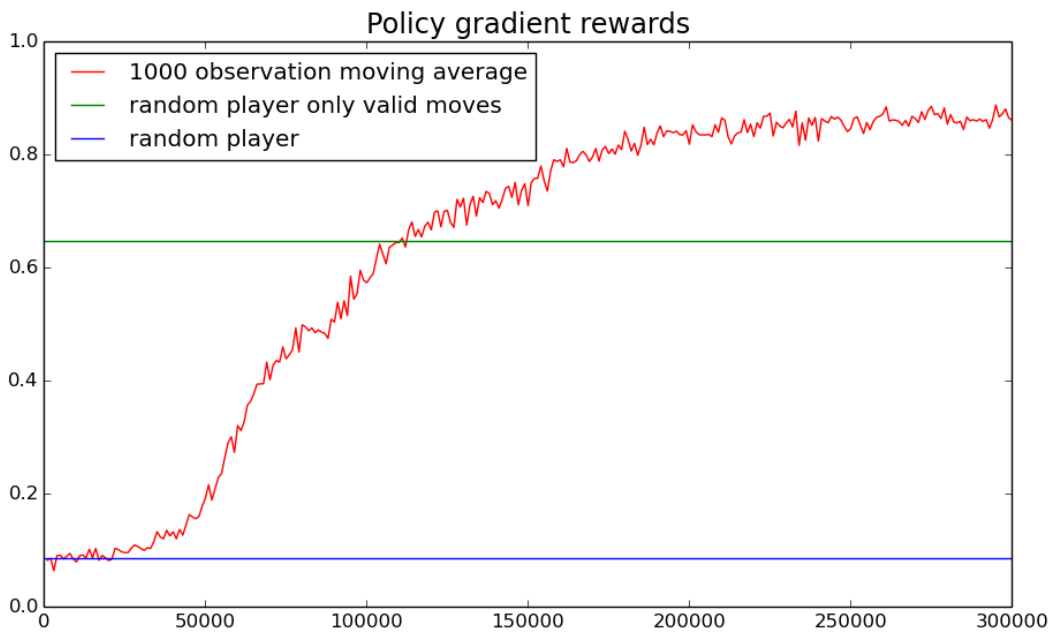


results/ # of played games

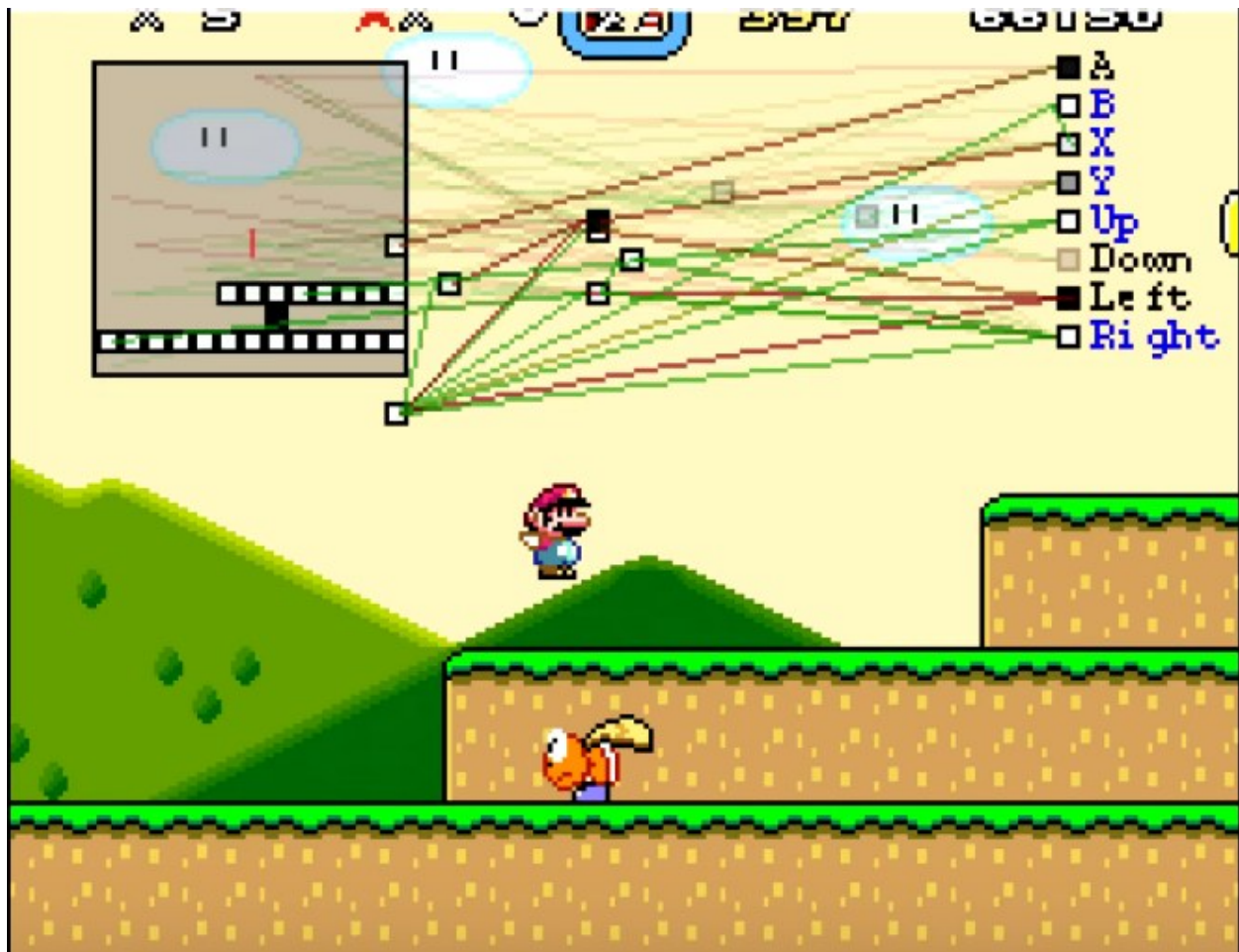
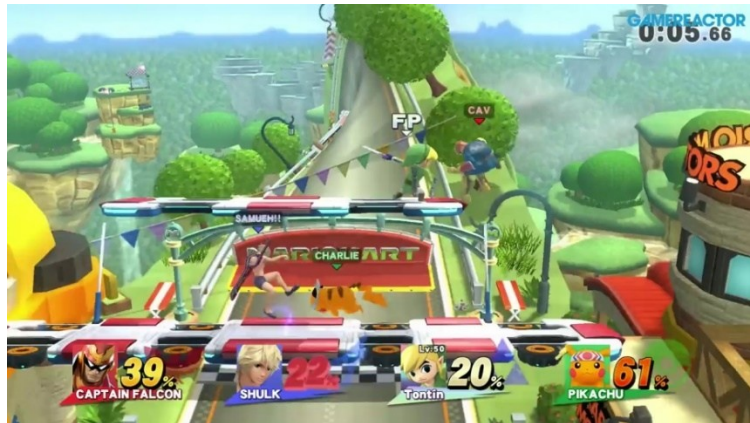


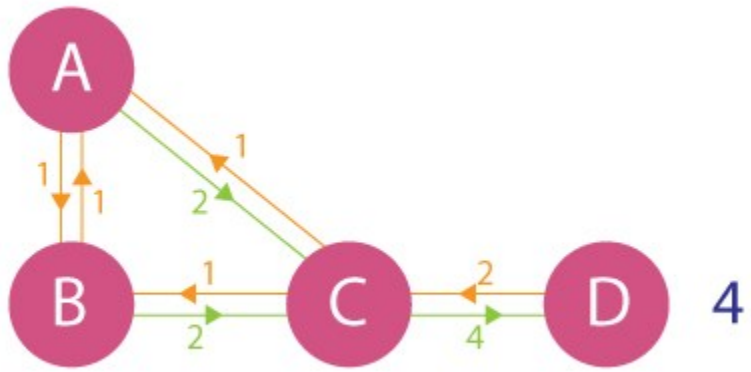
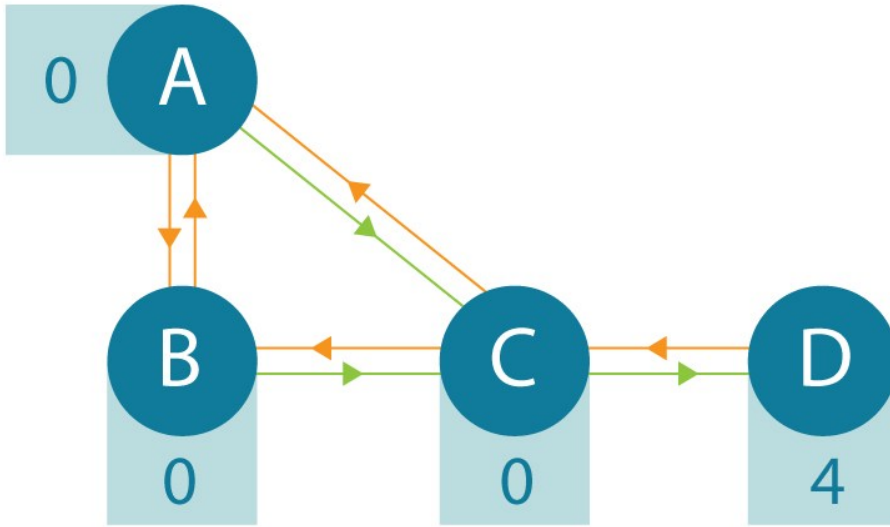
results/ # of played games

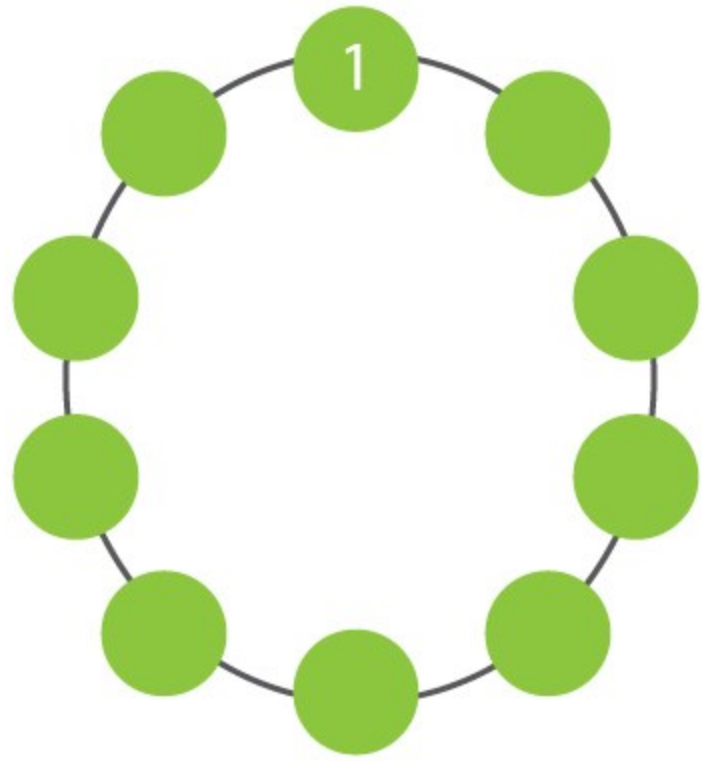




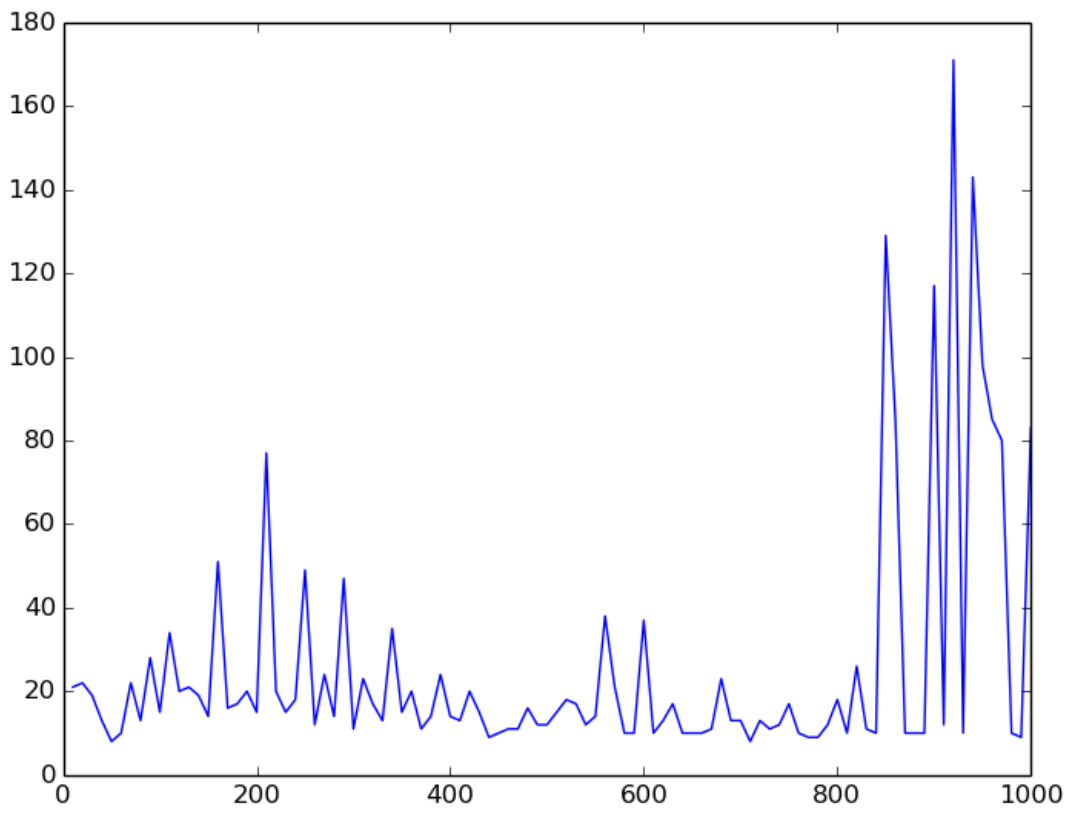
## Chapter 8: Deep Learning for Computer Games

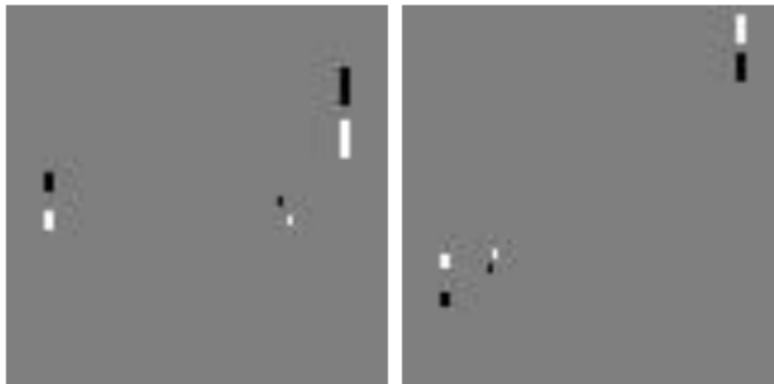
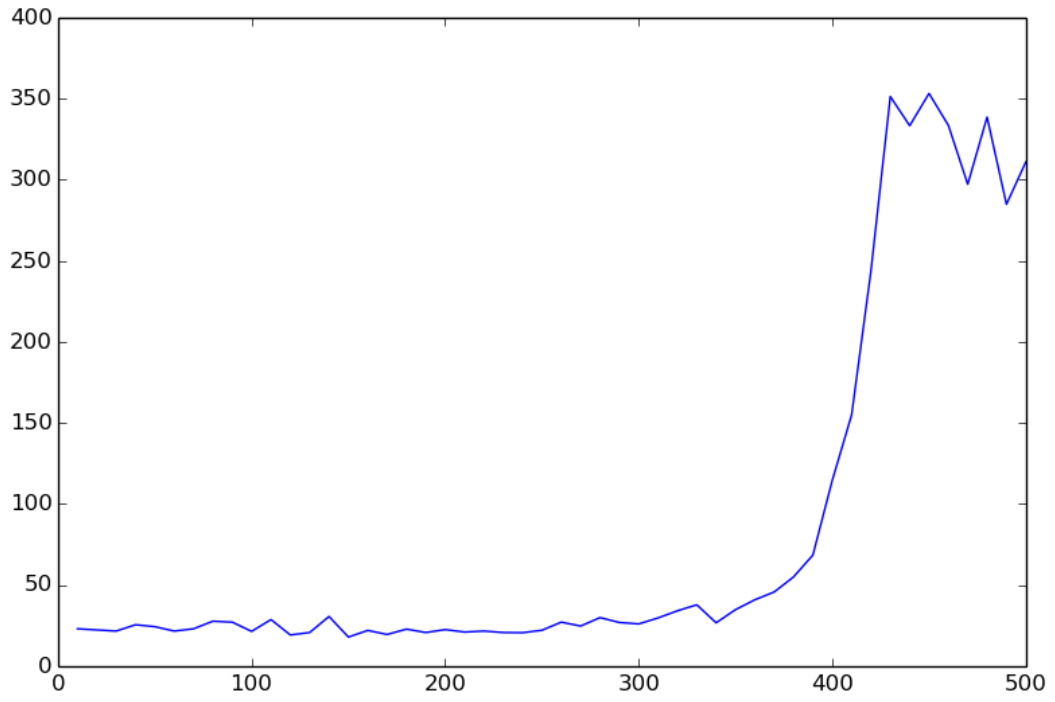


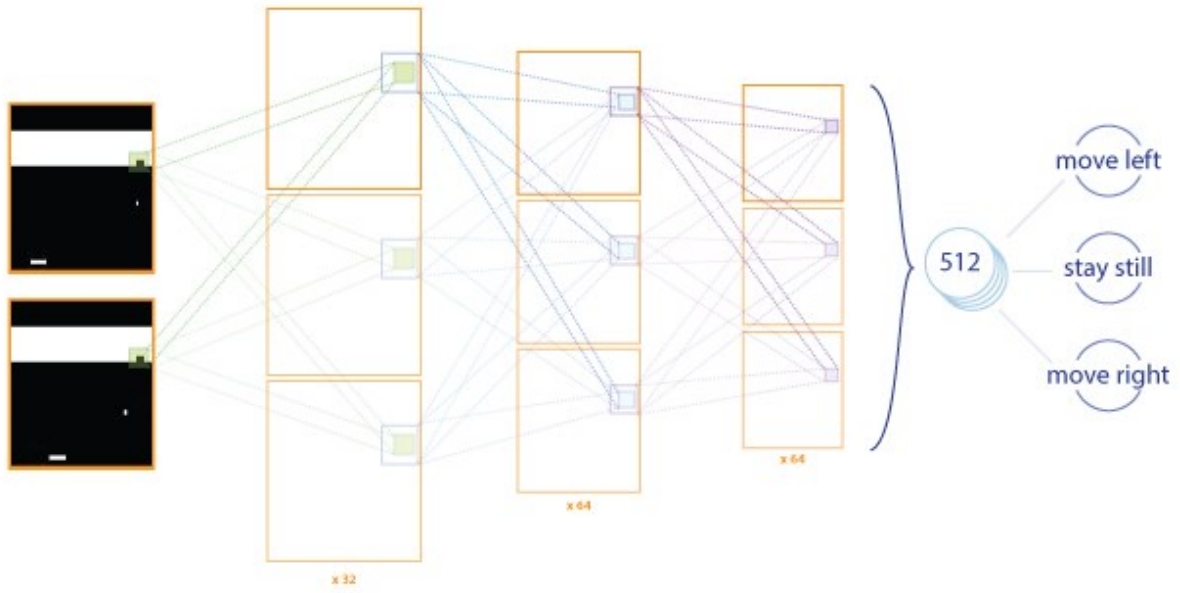
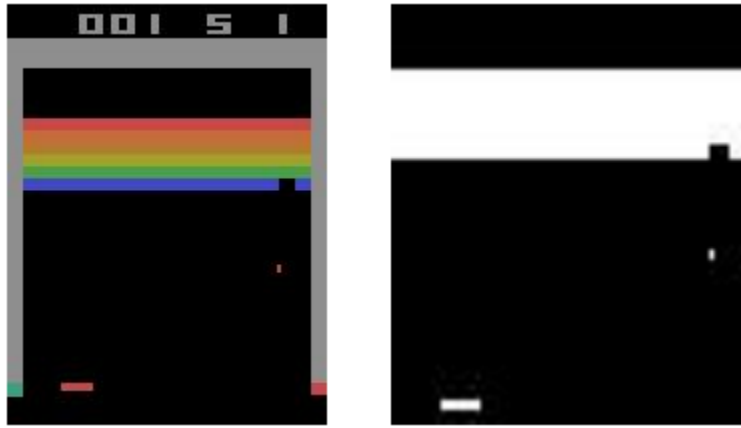


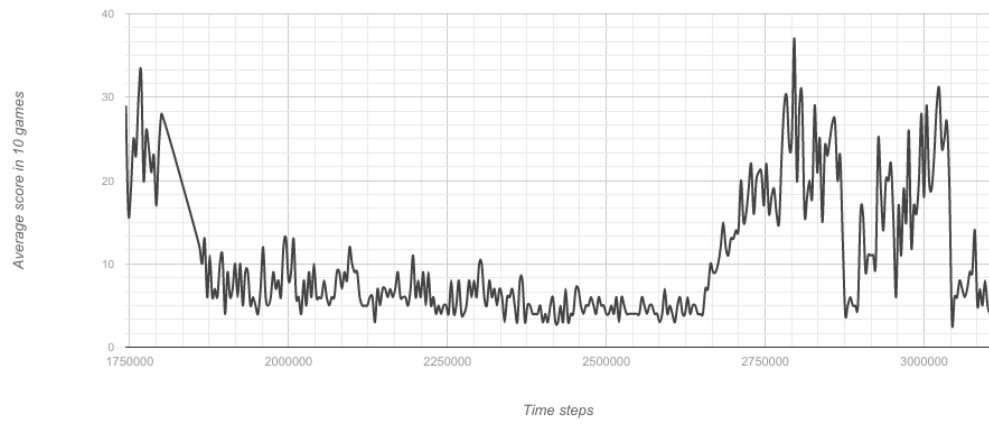
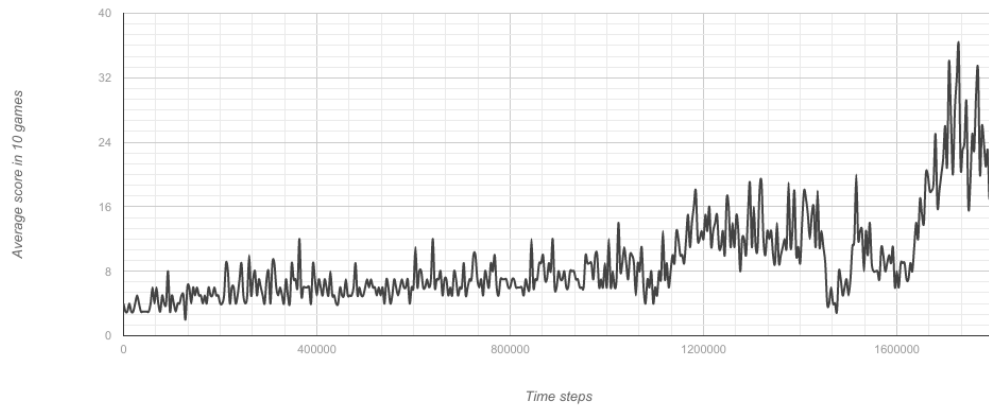


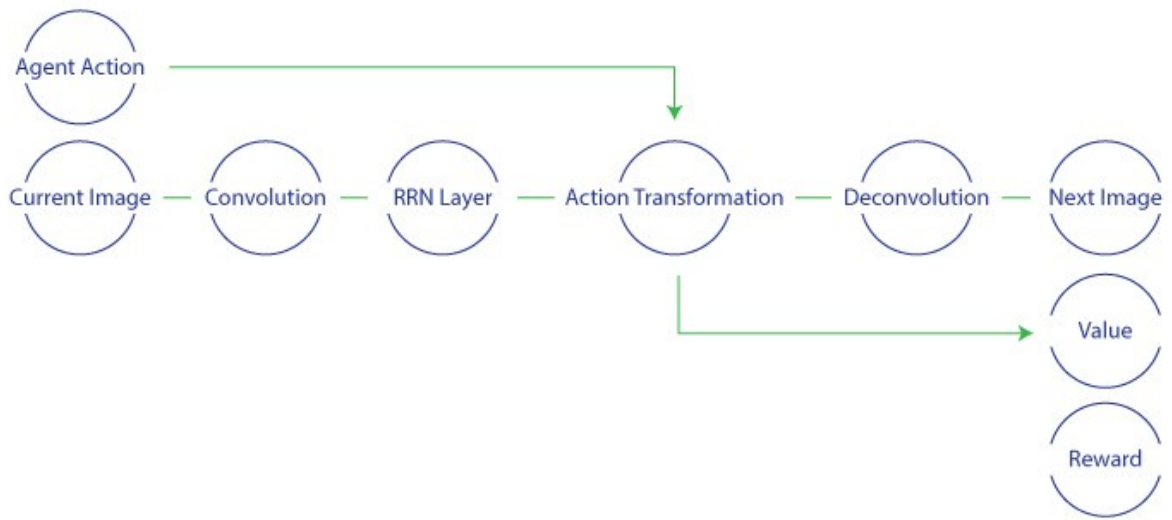




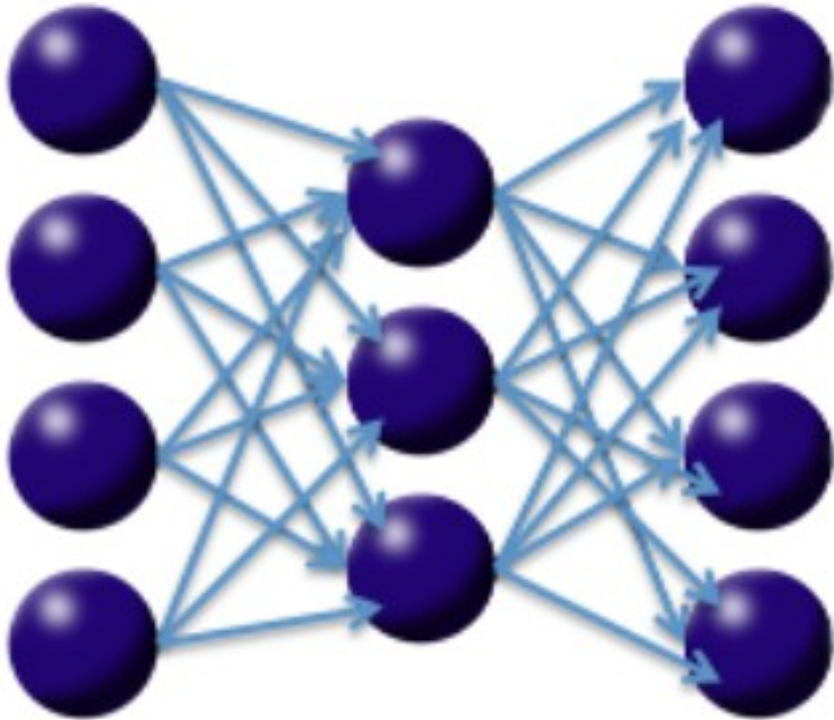
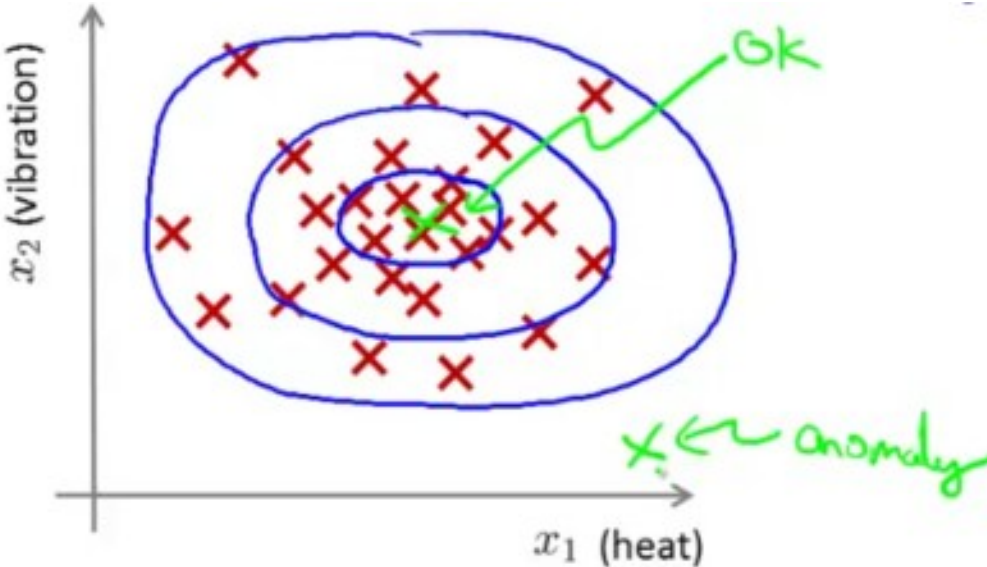


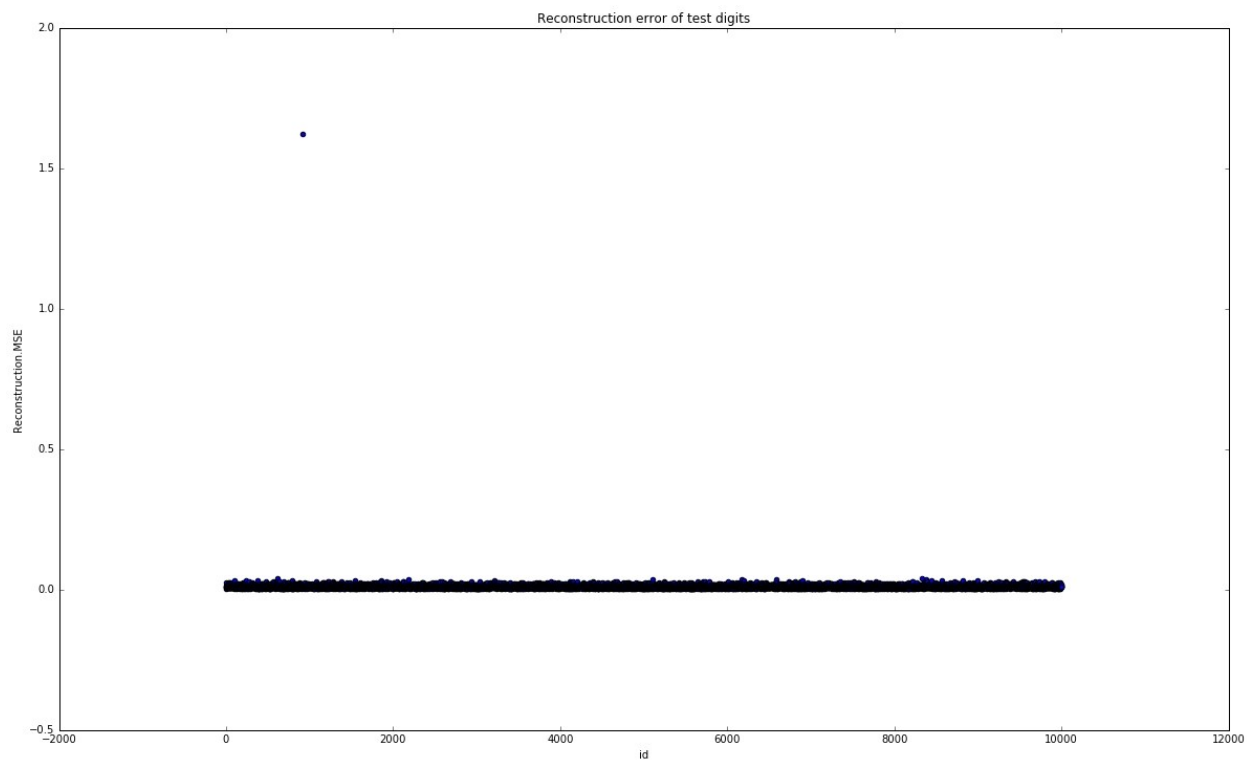




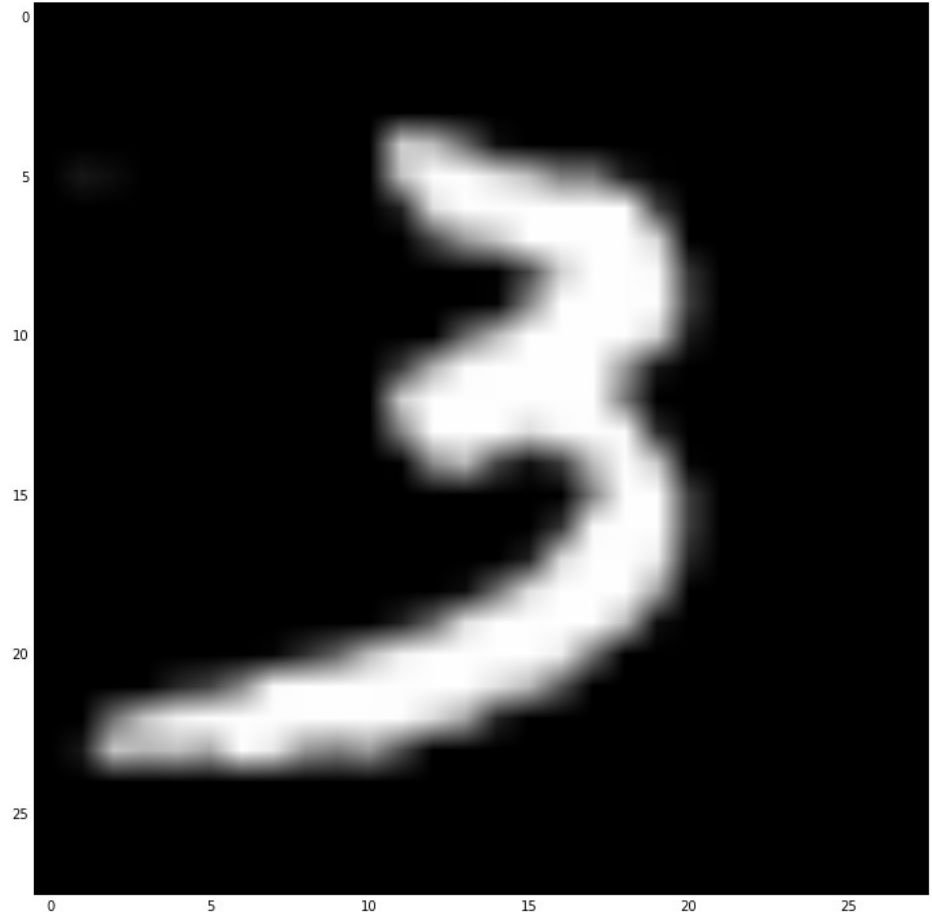


Chapter 9: Anomaly Detection





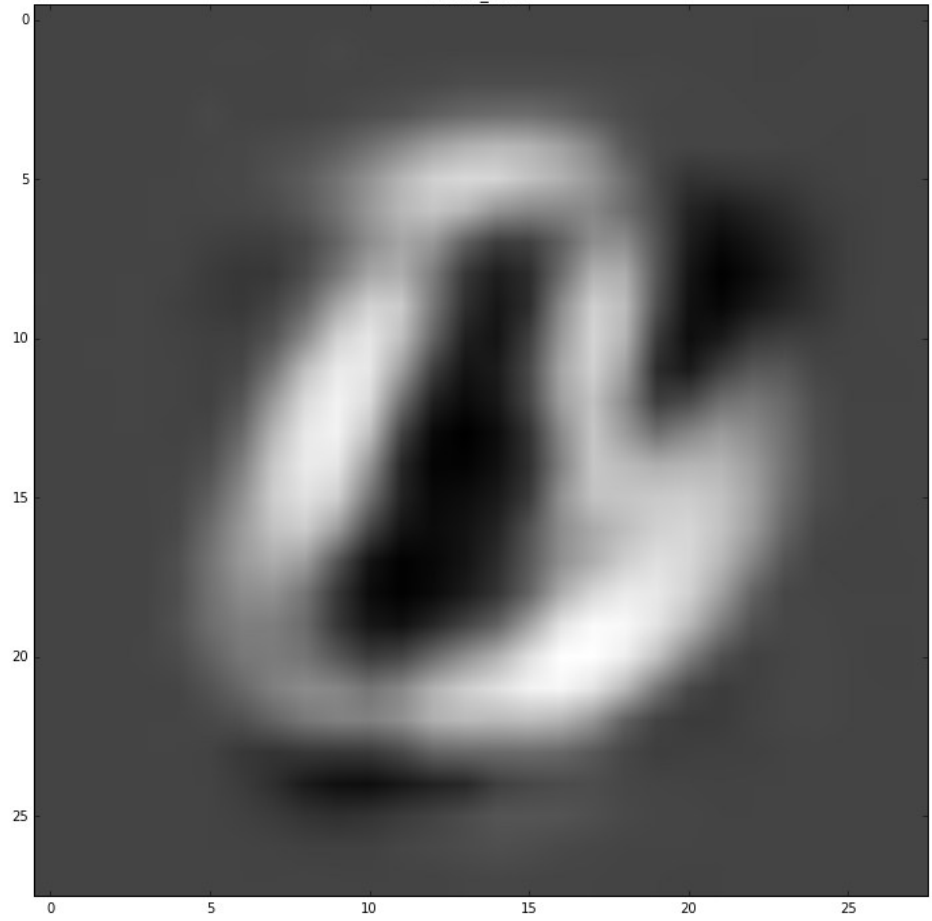
outlier



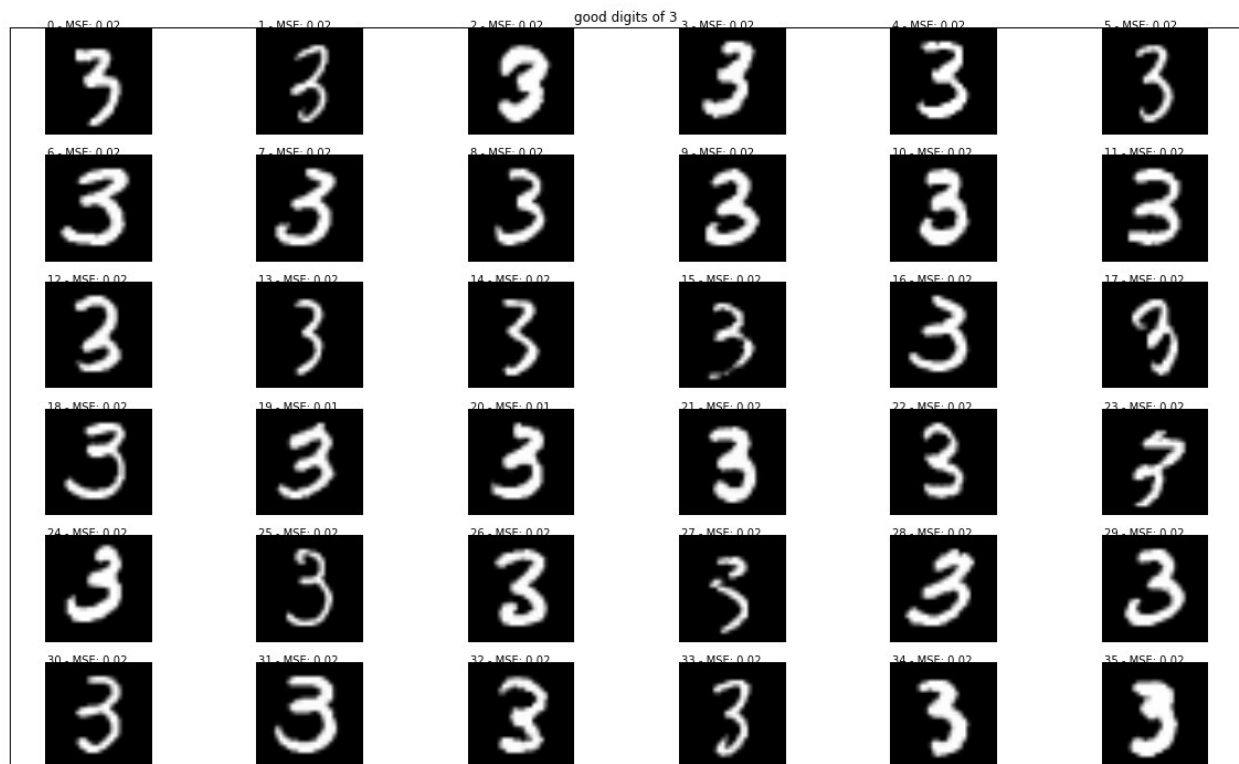
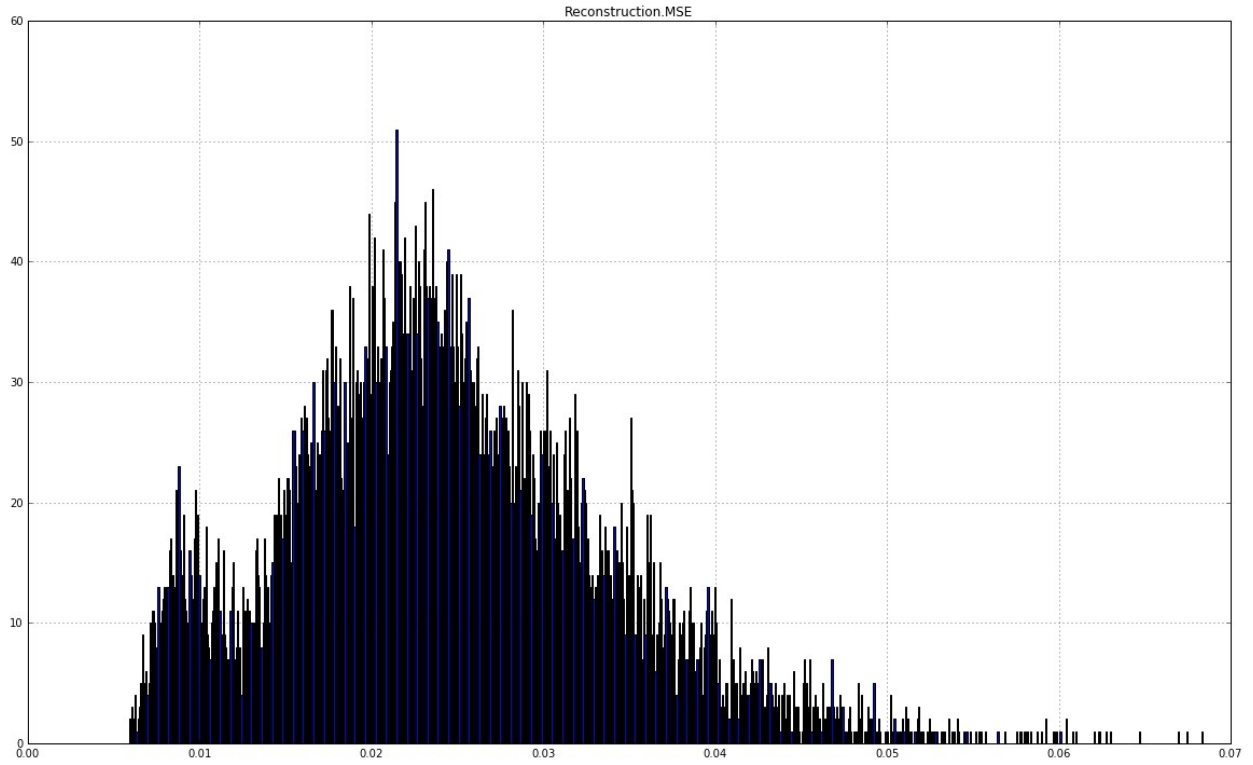
MSE: 1.62



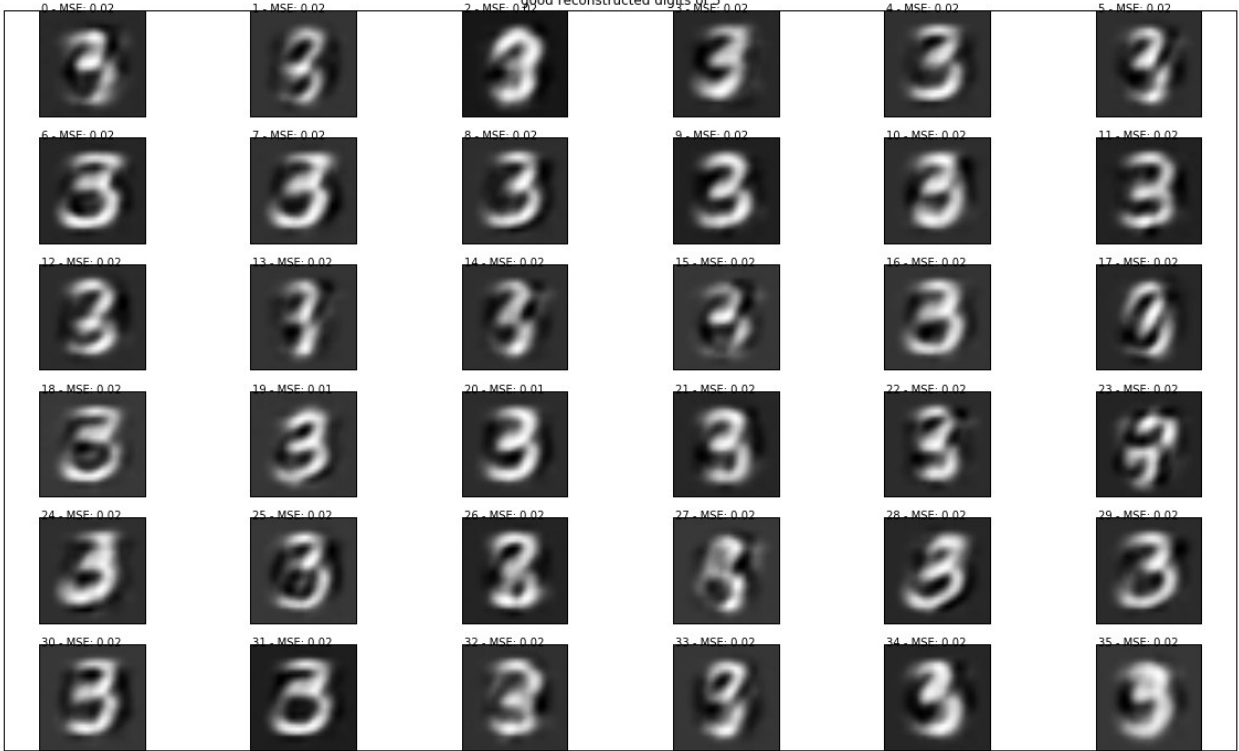
outlier\_recon



MSE: 1.62



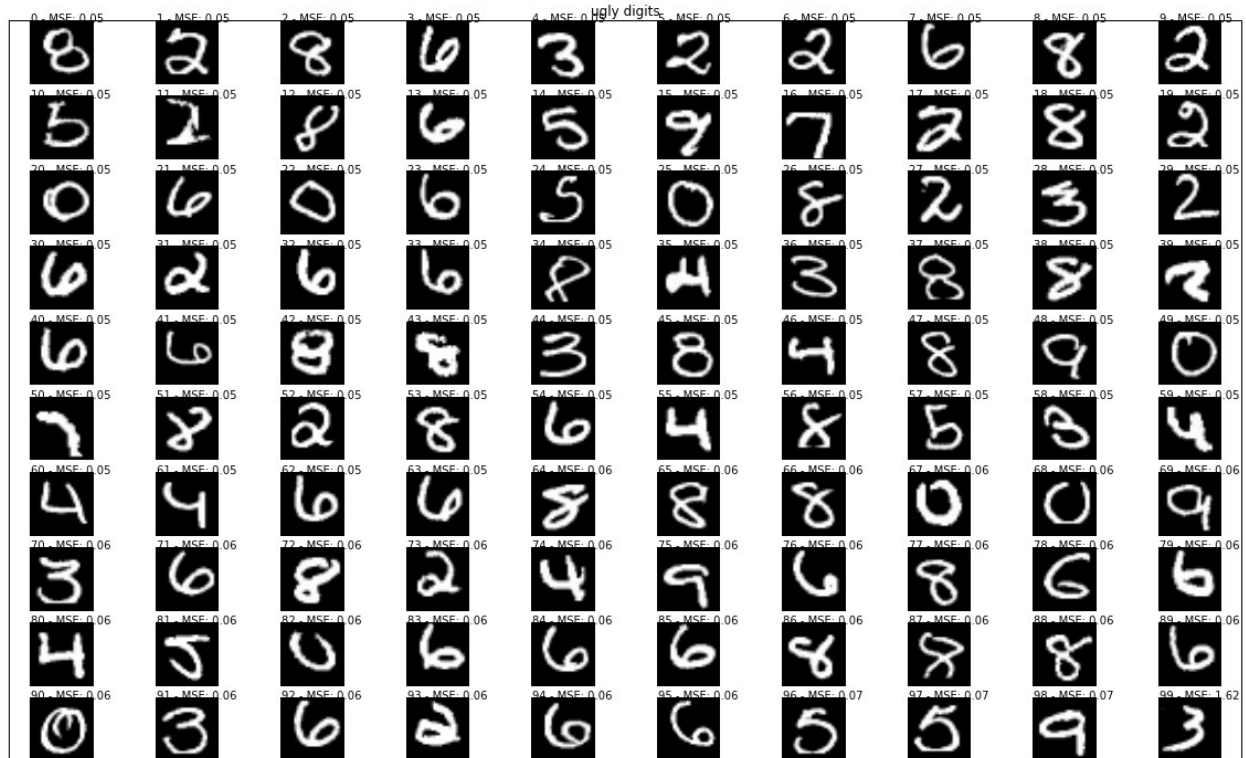
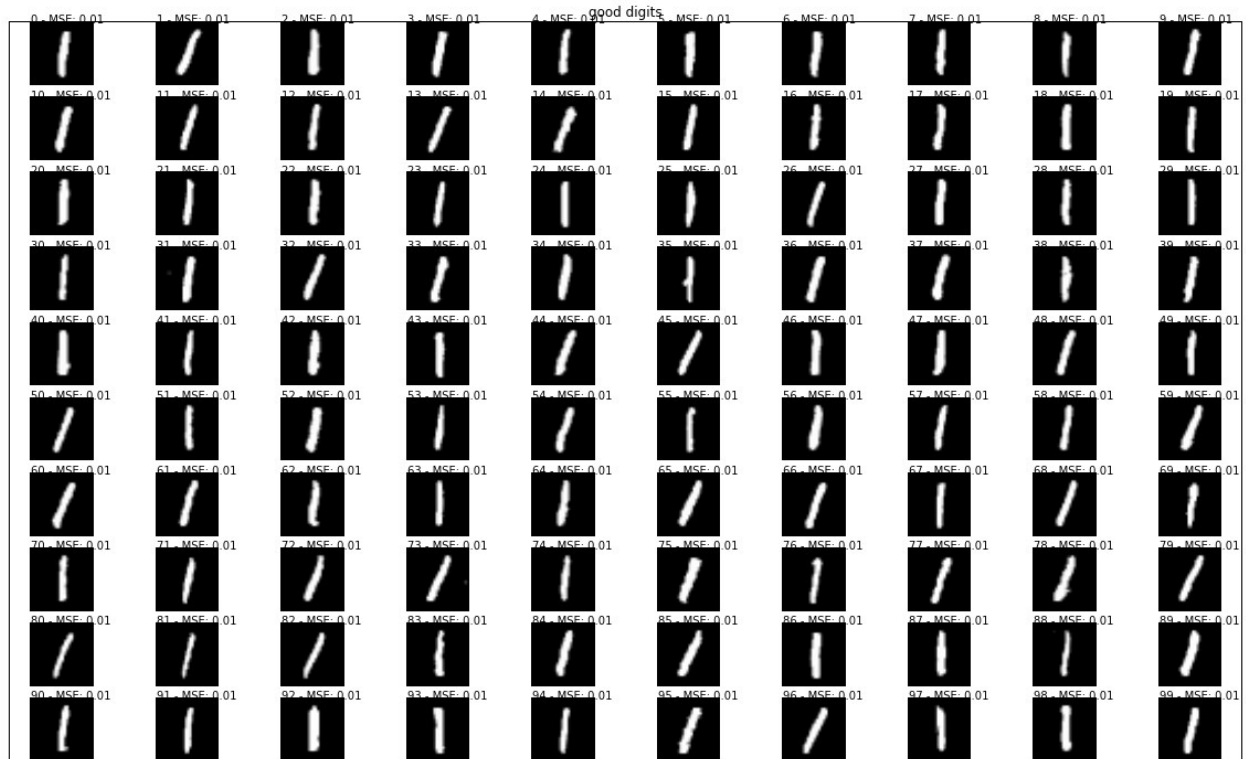
good reconstructed digits of 3

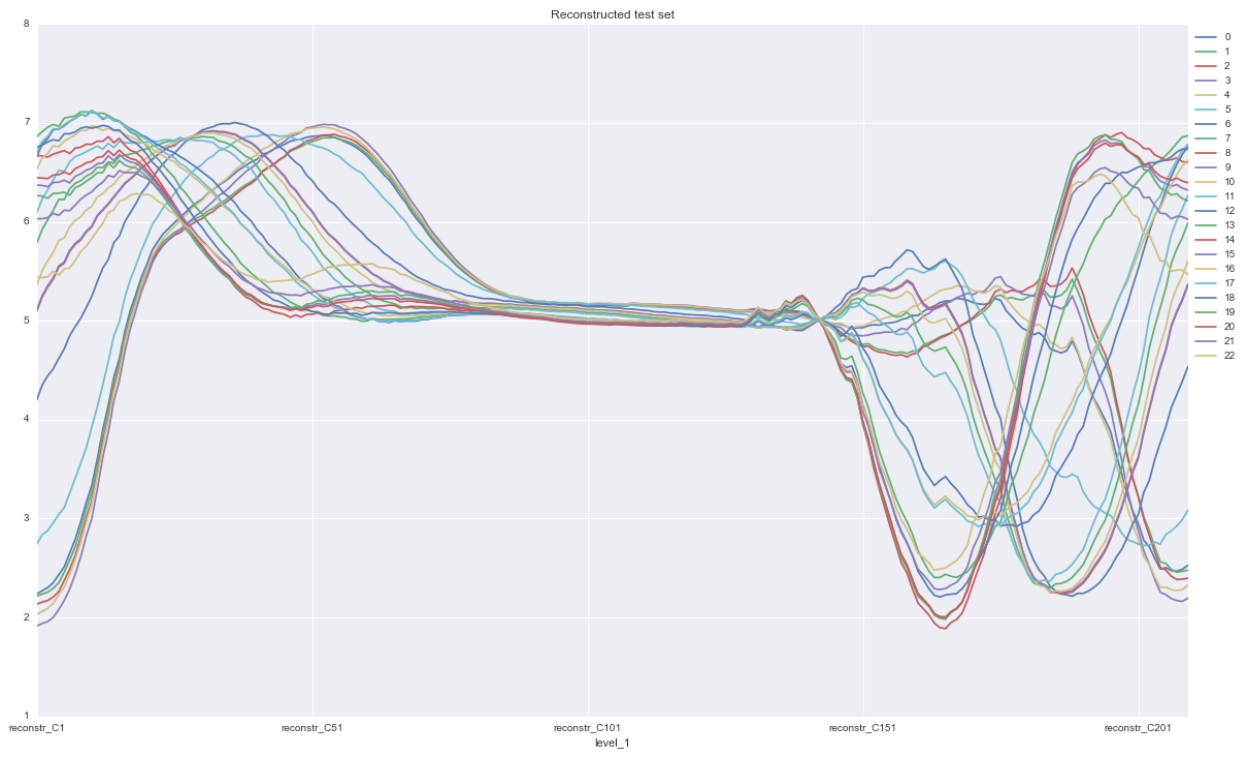
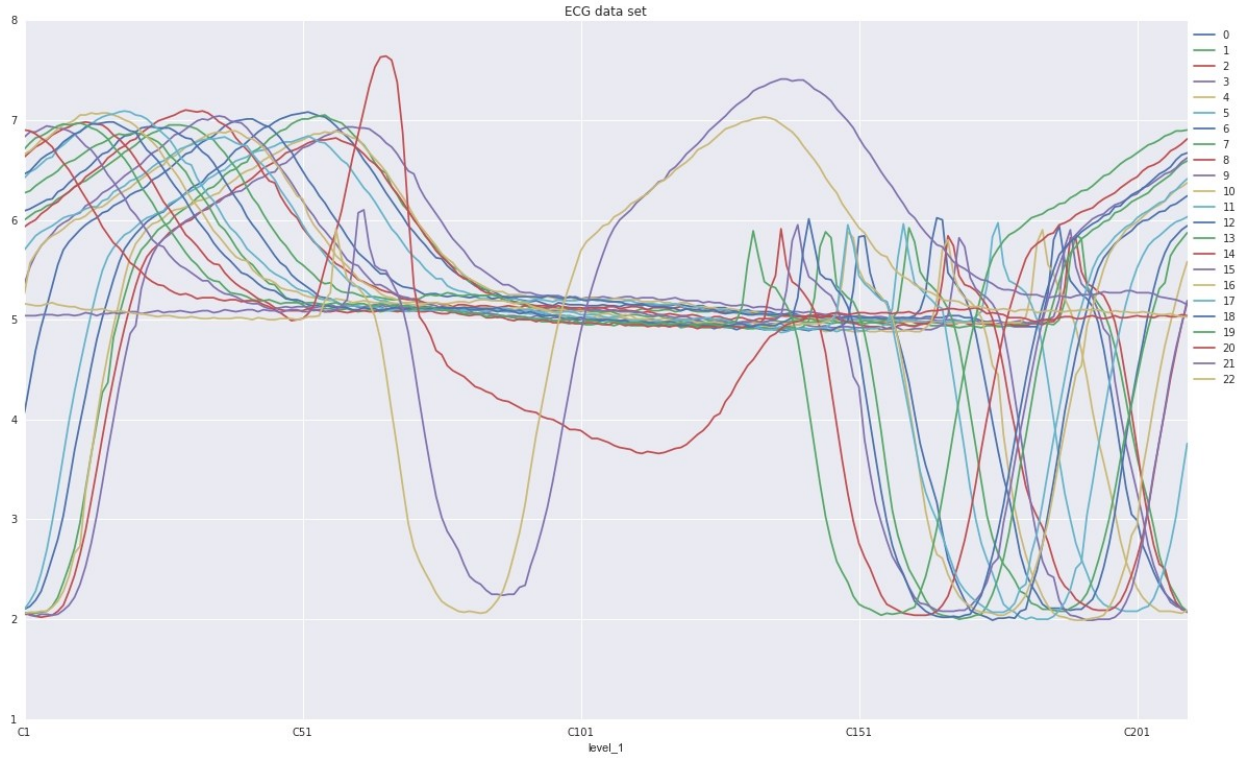


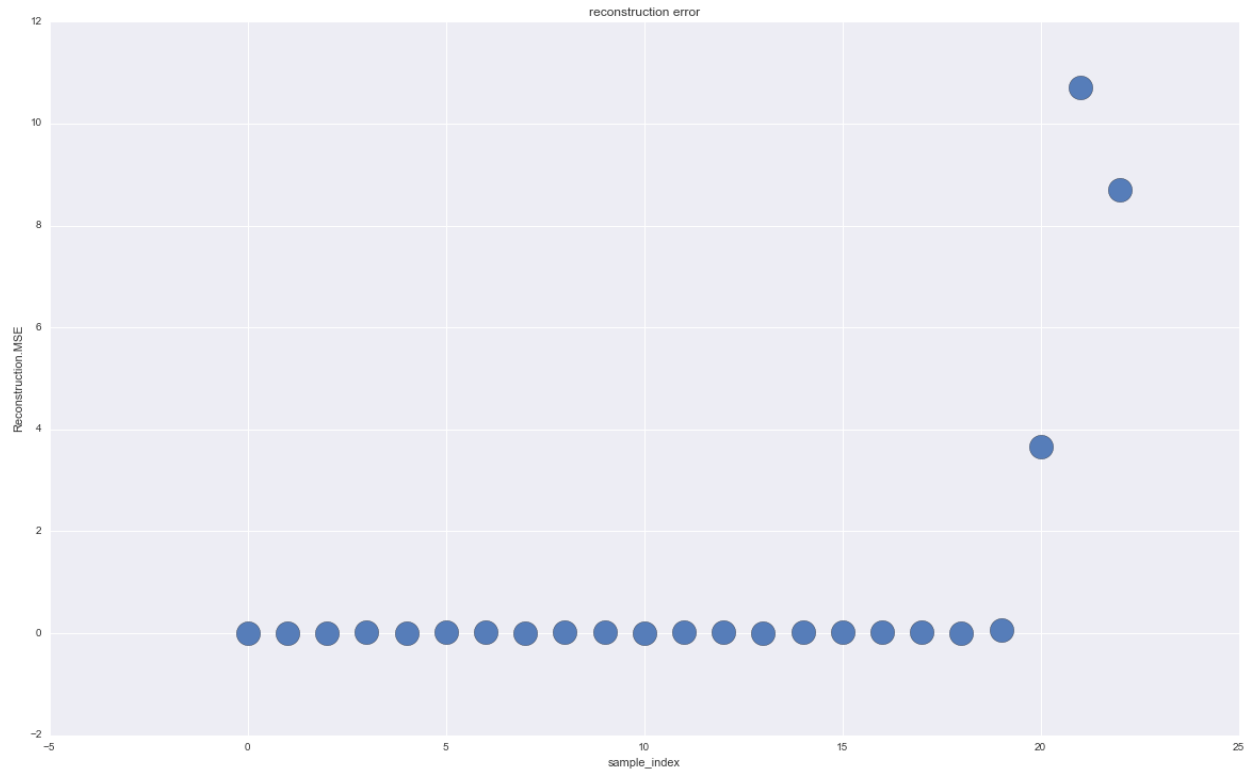
good digit of 3 with copied bottom left from outlier

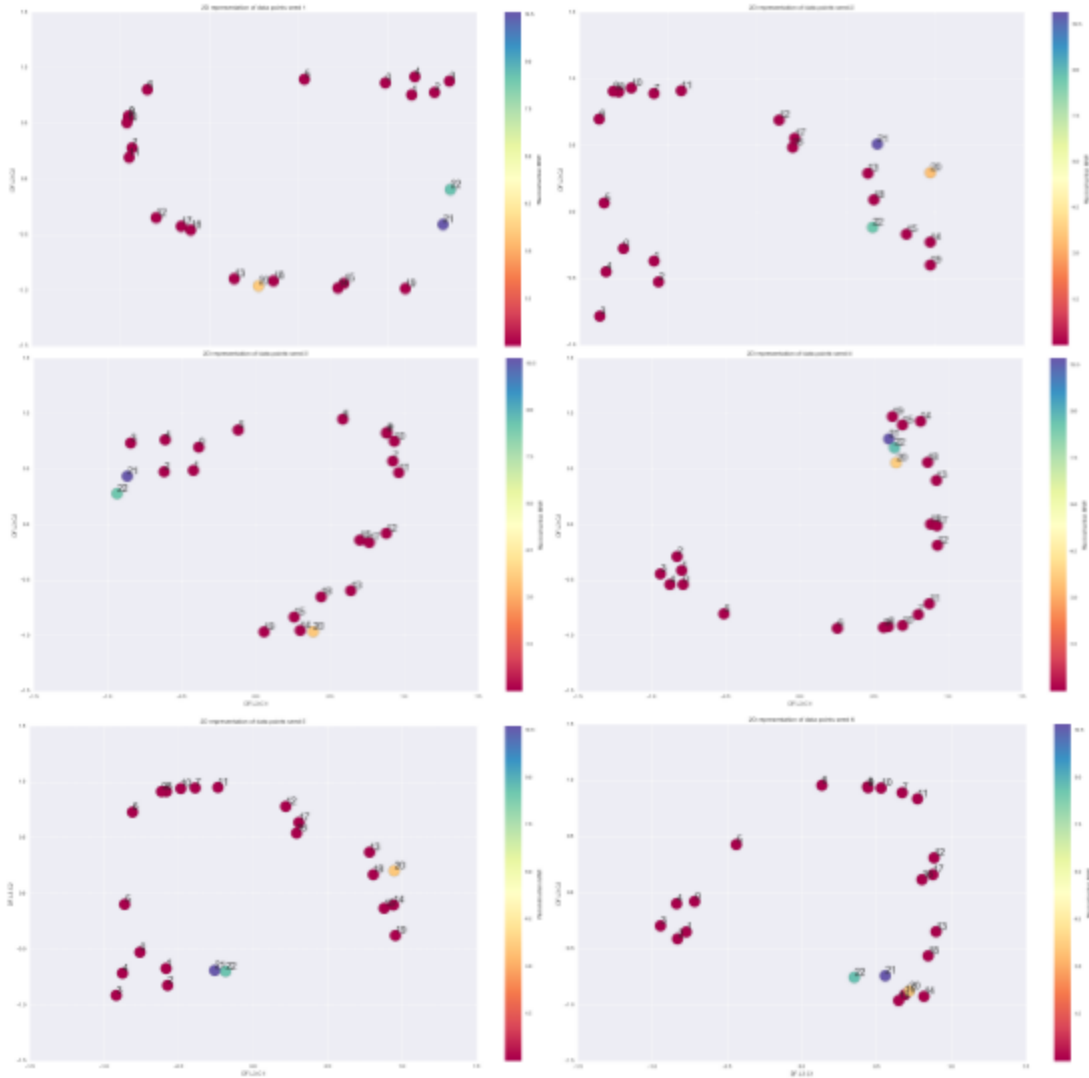


MSE: 0.86



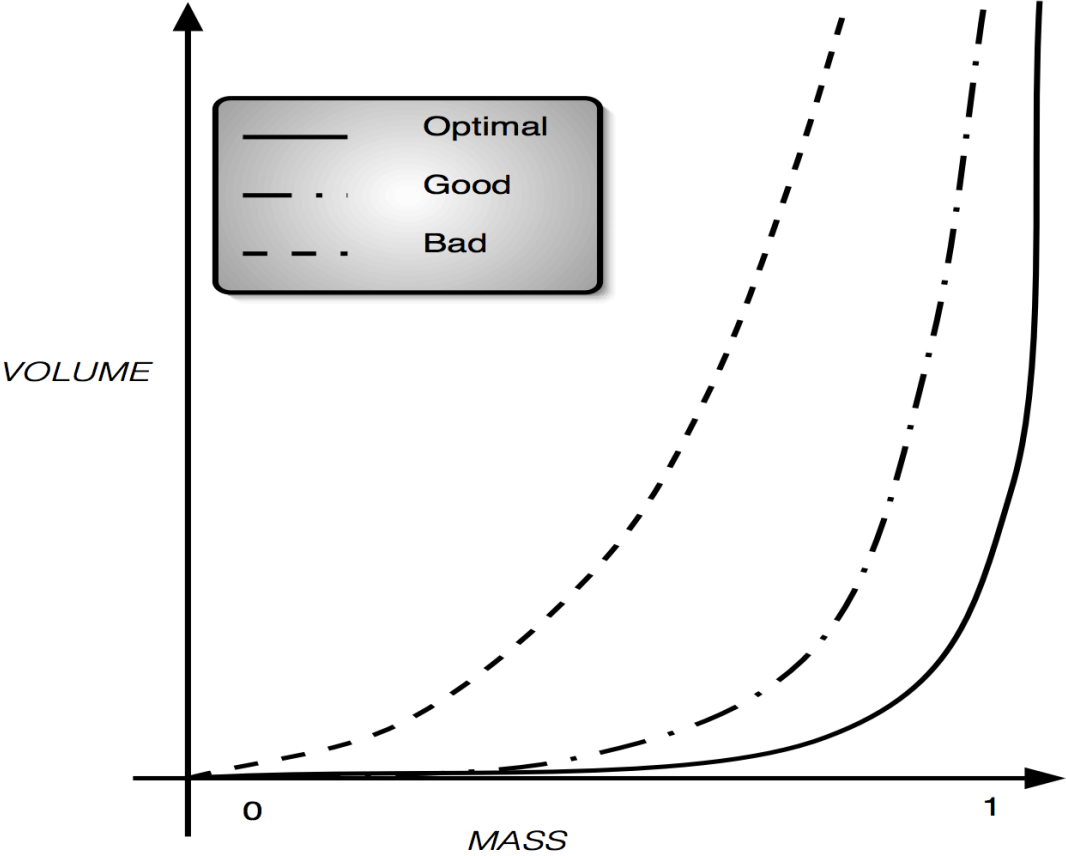


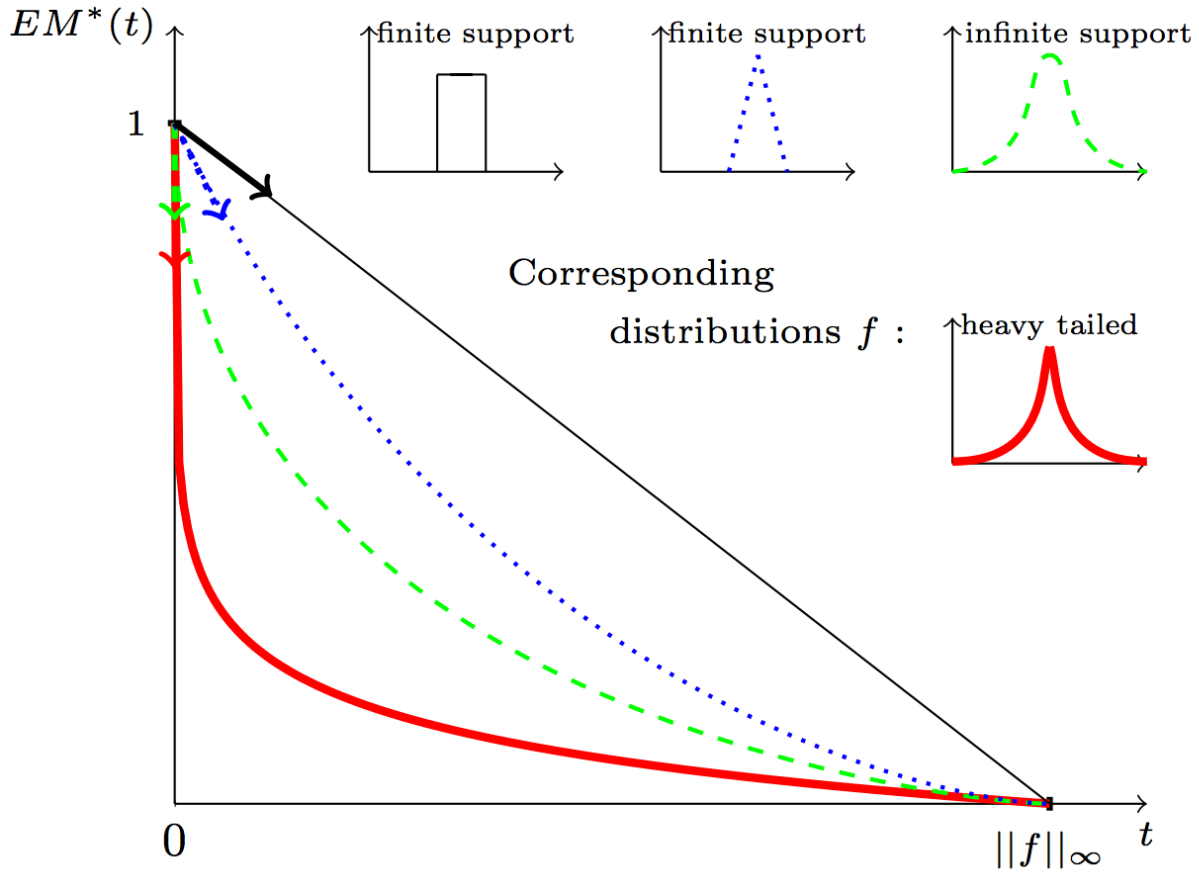




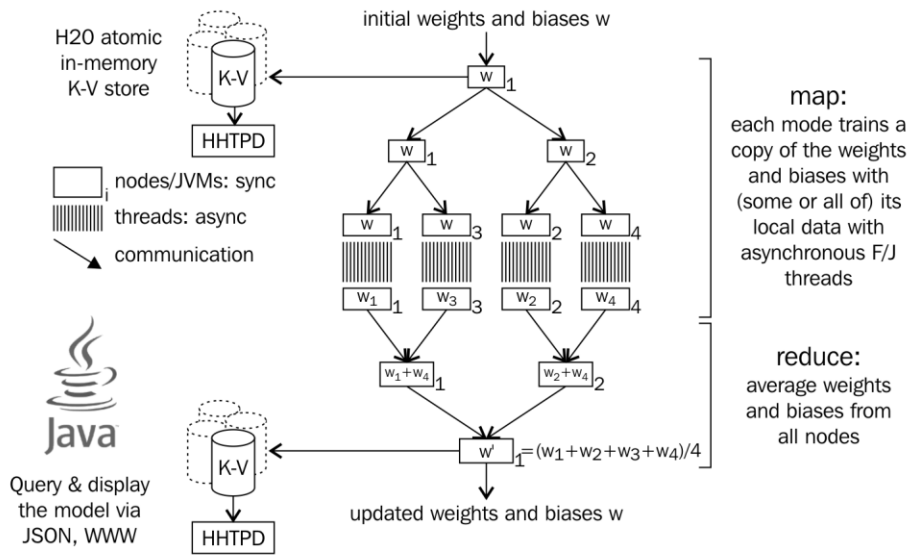


Chapter 10: Building a Production-Ready Intrusion Detection System





### H2O Deep Learning Architecture



Keep iterating over the data ("epochs"), score from time to time  
 mini-batch: number of total rows per iteration, can be less than 1 epoch

