

Deep Learning

Part 1 - Artificial Neural Networks

All below sections will be implemented with tensorflow and keras, Programming knowledge of tensorflow and keras will be given during model buildings.

Section 1

1. Artificial Neural networks Intuition
2. Plan of Attack
3. The Neuron
4. The Activation Function
5. How do Neural Networks work?
6. How do Neural Networks learn?
7. Gradient Descent
8. Stochastic Gradient Descent
9. Backpropagation

Section 2

10. Building an ANN
11. Prerequisites
12. How to get the dataset
13. Business Problem Description
14. Building an ANN - Step 1
15. Building an ANN - Step 2
16. Building an ANN - Step 3
17. Building an ANN - Step 4
18. Building an ANN - Step 5

- 19. Building an ANN - Step 6
- 20. Building an ANN - Step 7
- 21. Building an ANN - Step 8
- 22. Building an ANN - Step 9
- 23. Building an ANN - Step 10

Section 3

- 24. Homework Challenge - Should we say goodbye to that customer?
- 25. Homework Instruction
- 26. Homework Solution

Section 4

- 27. Evaluating, Improving and Tuning the ANN
- 28. Evaluating the ANN
- 29. Improving the ANN
- 30. Tuning the ANN

Part 2 - Convolutional Neural Networks

Section 5

- 31. CNN Intuition
- 32. What you'll Need for CNN
- 33. Plan of attack
- 34. What are convolutional neural networks?
- 35. Step 1 - Convolution Operation
- 36. Step 1(b) - ReLU Layer
- 37. Step 2 - Pooling
- 38. Step 3 - Flattening

39. Step 4 - Full Connection

40. Summary

41. Softmax

42. Cross-Entropy

Section 6

43. Building a CNN

44. How to get the dataset

45. Introduction to CNNs

46. Building a CNN - Step 1

47. Building a CNN - Step 2

48. Building a CNN - Step 3

49. Building a CNN - Step 4

50. Building a CNN - Step 5

51. Building a CNN - Step 6

52. Building a CNN - Step 7

53. Building a CNN - Step 8

54. Building a CNN - Step 9

55. Building a CNN - Step 10

Section 7

56. Homework - What's that pet ?

57. Homework Instruction

58. Homework Solution

59. Evaluating, Improving and Tuning the CNN

Part 3 - Recurrent Neural Networks

Section 8

- 60. RNN (Recurrent Neural networks) Intuition
- 61. What you'll need for RNN
- 62. Plan of attack
- 63. The idea behind Recurrent Neural Networks
- 64. The Vanishing Gradient Problem
- 65. LSTMs
- 66. Practical intuition
- 67. LSTM Variations

Section 9

- 68. Building a RNN
- 69. How to get the dataset
- 70. Building a RNN - Step 1
- 71. Building a RNN - Step 2
- 72. Building a RNN - Step 3
- 73. Building a RNN - Step 4
- 74. Building a RNN - Step 5
- 75. Building a RNN - Step 6
- 76. Building a RNN - Step 7
- 77. Building a RNN - Step 8
- 78. Building a RNN - Step 9
- 79. Building a RNN - Step 10
- 80. Building a RNN - Step 11

81. Building a RNN - Step 12

82. Building a RNN - Step 13

83. Building a RNN - Step 14

84. Building a RNN - Step 15

Section 10

85. Evaluating, Improving and Tuning the RNN

86. Evaluating the RNN

87. Improving the RNN

88. Tuning the RNN

Part 4 - Self Organizing Maps

Section 11

89. SOMs [Self-Organizing Maps] Intuition

90. Plan of attack

91. How do Self-Organizing Maps Work?

92. Why revisit K-Means?

93. K-Means Clustering (Refresher)

94. How do Self-Organizing Maps Learn? (Part 1)

95. How do Self-Organizing Maps Learn? (Part 2)

96. Live SOM example

97. Reading an Advanced SOM

98. K-means Clustering (part 2)

99. K-means Clustering (part 3)

Section 12

100. Building a SOM

101. How to get the dataset

103. Building a SOM - Step 1

104. Building a SOM - Step 2

105. Building a SOM - Step 3

106. Building a SOM - Step 4

Section 13

Case study

All above sections will be implemented with tensorflow and keras, Programming knowledge of tensorflow and keras will be given during Model buildings