GUVI

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ONE FOURTH LABS

PADHAI

A HANDS-ONCOURSE IN

DEEP LEARNING

COURSE SYLLABUS

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Syllabus

1: Python Basics

2: Expert Systems - 6 Jars

3: Vectors and Matrices

4: Python More Basics + Linear Algebra

5: MP Neuron

6: Perceptron

7: Python: MP Neuron, Perceptron, Test/Train

8: Contests

9: Contest 1.1: Mobile phone like/dislike predictor

10: Sigmoid Neuron, Gradient Descent

11: Python: Sigmoid, Gradient Descent

12: Python: Sigmoid, Gradient Descent (contd)

13: Basic: Probability Theory

14: Information Theory

15: Sigmoid Neuron and Cross Entropy

16: Contest 1.1 discussion

17: Contest 1.2: Binary Text/NoText Classification

18: Contest 1.3 (Advanced): Binary Text/NoText Classification

19: Representation Power of Functions

20: Feedforward Neural Networks

21: Python: Feed Forward Networks

22: Backpropagation (light math)

23: Python: Scalar Backpropagation

24: Backpropagation (vectorized)

25: Python: Vectorised Feed Forward Networks

26: Optimization Algorithms (Part 1)

27: Optimization Algorithms (Part 2)

28: Python: Optimization Algorithms

29: Python: Optimization Algorithms 2

30: Contest 1.3 (Advanced): analysis

Syllabus - contd

31: Activation Functions and Initialization Methods

32: Python: Activation Functions and Initialisation Methods

33: Regularization Methods

34: Python: Overfitting and Regularisation

35: Python: PyTorch Intro

36: PyTorch: Feed Forward Networks

37: The convolution operation

38: Convolutional Neural Networks

39: PyTorch: CNN

40: CNN architectures

41: CNN Architectures (Part 2)

42: Python: CNN Architectures

43: Visualising CNNs

44: Python: Visualising CNNs

45: Batch Normalization and Dropout

46: Pytorch: BatchNorm and Dropout

47: Hyperparameter Tuning and MLFlow

48: Practice problem: CNN and FNN

49: Sequence Learning Problems

50: Recurrent Neural Networks

51: Vanishing and exploding gradients

52: LSTMs and GRUs

53: Sequence Models in PyTorch

54: Vanishing and Exploding gradients and LSTMs

55: Encoder Decoder Models

56: Attention Mechanism

57: Object detection

58: Capstone project