

NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Computer Science and Engineering - NOC:Deep Learning

Subject Co-ordinator - Prof.Mitesh Khapra

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

- Lecture 1 - Biological Neuron
- Lecture 2 - From Spring to Winter of AI
- Lecture 3 - The Deep Revival
- Lecture 4 - From Cats to Convolutional Neural Networks
- Lecture 5 - Faster, higher, stronger
- Lecture 6 - The Curious Case of Sequences
- Lecture 7 - Beating humans at their own games (literally)
- Lecture 8 - The Madness (2013)
- Lecture 9 - (Need for) Sanity
- Lecture 10 - Motivation from Biological Neurons
- Lecture 11 - McCulloch Pitts Neuron, Thresholding Logic
- Lecture 12 - Perceptrons
- Lecture 13 - Error and Error Surfaces
- Lecture 14 - Perceptron Learning Algorithm
- Lecture 15 - Proof of Convergence of Perceptron Learning Algorithm
- Lecture 16 - Deep Learning (CS7015)
- Lecture 17 - Deep Learning (CS7015)
- Lecture 18 - Deep Learning (CS7015)
- Lecture 19 - Deep Learning (CS7015)
- Lecture 20 - Deep Learning (CS7015)
- Lecture 21 - Deep Learning (CS7015)
- Lecture 22 - Deep Learning (CS7015)
- Lecture 23 - Feedforward Neural Networks (a.k.a multilayered network of neurons)
- Lecture 24 - Learning Parameters of Feedforward Neural Networks (Intuition)
- Lecture 25 - Output functions and Loss functions
- Lecture 26 - Backpropagation (Intuition)
- Lecture 27 - Backpropagation
- Lecture 28 - Backpropagation
- Lecture 29 - Backpropagation

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- Lecture 30 - Backpropagation
- Lecture 31 - Derivative of the activation function
- Lecture 32 - Information content, Entropy and cross entropy
- Lecture 33 - Recap
- Lecture 34 - Contours Maps
- Lecture 35 - Momentum based Gradient Descent
- Lecture 36 - Nesterov Accelerated Gradient Descent
- Lecture 37 - Stochastic And Mini-Batch Gradient Descent
- Lecture 38 - Tips for Adjusting Learning Rate and Momentum
- Lecture 39 - Line Search
- Lecture 40 - Gradient Descent with Adaptive Learning Rate
- Lecture 41 - Bias Correction in Adam
- Lecture 42 - Eigenvalues and Eigenvectors
- Lecture 43 - Linear Algebra
- Lecture 44 - Eigenvalue Decomposition
- Lecture 45 - Principal Component Analysis and its Interpretations
- Lecture 46 - PCA
- Lecture 47 - PCA
- Lecture 48 - PCA
- Lecture 49 - PCA
- Lecture 50 - Singular Value Decomposition
- Lecture 51 - Introduction to Autoencoders
- Lecture 52 - Link between PCA and Autoencoders
- Lecture 53 - Regularization in autoencoders (Motivation)
- Lecture 54 - Denoising Autoencoders
- Lecture 55 - Sparse Autoencoders
- Lecture 56 - Contractive Autoencoders
- Lecture 57 - Bias and Variance
- Lecture 58 - Train error vs Test error
- Lecture 59 - Train error vs Test error (Recap)
- Lecture 60 - True error and Model complexity
- Lecture 61 - L2 regularization
- Lecture 62 - Dataset augmentation
- Lecture 63 - Parameter sharing and tying
- Lecture 64 - Adding Noise to the inputs
- Lecture 65 - Adding Noise to the outputs
- Lecture 66 - Early stopping
- Lecture 67 - Ensemble Methods
- Lecture 68 - Dropout

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- Lecture 69 - A quick recap of training deep neural networks
- Lecture 70 - Unsupervised pre-training
- Lecture 71 - Better activation functions
- Lecture 72 - Better initialization strategies
- Lecture 73 - Batch Normalization
- Lecture 74 - One-hot representations of words
- Lecture 75 - Distributed Representations of words
- Lecture 76 - SVD for learning word representations
- Lecture 77 - SVD for learning word representations (Continued...)
- Lecture 78 - Continuous bag of words model
- Lecture 79 - Skip-gram model
- Lecture 80 - Skip-gram model (Continued...)
- Lecture 81 - Contrastive estimation
- Lecture 82 - Hierarchical softmax
- Lecture 83 - GloVe representations
- Lecture 84 - Evaluating word representations
- Lecture 85 - Relation between SVD and Word2Vec
- Lecture 86 - The convolution operation
- Lecture 87 - Relation between input size, output size and filter size
- Lecture 88 - Convolutional Neural Networks
- Lecture 89 - Convolutional Neural Networks (Continued...)
- Lecture 90 - CNNs (success stories on ImageNet)
- Lecture 91 - CNNs (success stories on ImageNet) (Continued...)
- Lecture 92 - Image Classification continued (GoogLeNet and ResNet)
- Lecture 93 - Visualizing patches which maximally activate a neuron
- Lecture 94 - Visualizing filters of a CNN
- Lecture 95 - Occlusion experiments
- Lecture 96 - Finding influence of input pixels using backpropagation
- Lecture 97 - Guided Backpropagation
- Lecture 98 - Optimization over images
- Lecture 99 - Create images from embeddings
- Lecture 100 - Deep Dream
- Lecture 101 - Deep Art
- Lecture 102 - Fooling Deep Convolutional Neural Networks
- Lecture 103 - Sequence Learning Problems
- Lecture 104 - Recurrent Neural Networks
- Lecture 105 - Backpropagation through time
- Lecture 106 - The problem of Exploding and Vanishing Gradients
- Lecture 107 - Some Gory Details

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- Lecture 108 - Selective Read, Selective Write, Selective Forget - The Whiteboard Analogy
- Lecture 109 - Long Short Term Memory (LSTM) and Gated Recurrent Units (GRUs)
- Lecture 110 - How LSTMs avoid the problem of vanishing gradients
- Lecture 111 - How LSTMs avoid the problem of vanishing gradients (Continued...)
- Lecture 112 - Introduction to Encoder Decoder Models
- Lecture 113 - Applications of Encoder Decoder models
- Lecture 114 - Attention Mechanism
- Lecture 115 - Attention Mechanism (Continued...)
- Lecture 116 - Attention over images
- Lecture 117 - Hierarchical Attention