Course: Deep Learning

Course Code: noc18-cs41

Session: 2018-19

Duration: 12 Weeks

Assessment procedures: Weekly Assignment (25%) + proctored certification Exam (75%)

Curriculum of the Course:

Week 1:
- History of Deep Learning
- Deep Learning Success Stories
- McCulloch Pitts Neuron

Week 2:
- Multilayer Perceptrons (MLPs)
- Representation Power of MLPs
- Sigmoid Neurons
- Gradient Descent

Week 3:
- Feed Forward Neural Networks
- Back propagation

Week 4:
- Gradient Descent (GD)
- Momentum Based GD
- Nesterov Accelerated GD
- Stochastic GD

Week 5:
- Principal Component Analysis and its interpretations
- Singular Value Decomposition

Week 6:
- Auto encoders and relation to PCA
- Regularization in auto encoders
- Denoising auto encoders
- Sparse auto encoders

Week 7:
- Regularization: Bias Variance Tradeoff
- L2 regularization
- Early stopping
- Dataset augmentation

Week 8:
- Greedy Layerwise Pre-training
- Better activation functions
- Better weight initialization methods
- Batch Normalization

Week 9:
- Learning Vectorial Representations Of Words

Week 10:
- Convolutional Neural Networks
- LeNet, AlexNet
- ZF-Net, VGGNet
- GoogLeNet
- ResNet

Week 11:
- Recurrent Neural Networks
- Back propagation through time (BPTT)
- Vanishing and Exploding Gradients
- Truncated BPTT
- GRU
- LSTMs

Week 12:
- Encoder Decoder Models,
- Attention Mechanism,
- Attention over images

List of students enrolled

S. No	Name of Student
1	Aman Kumar Gautam
2	Anshul Kumar Garg
3	Ayushi Jain
4	Shivam Pandey
5	Mohit Sharma
6	Shiwanshu Mani