☎ 27667591, 27667059, 27667725
Extn. 1336 Fax: 27662553
DEPARTMENT OF COMPUTER SCIENCE
संगणक विभाग,
UNIVERSITY OF DELHI, DELHI - 110 007 (INDIA)
दिल्ली विश्वविद्यालय, दिल्ली - 110 007 (भारत)

MCS- 210 Deep Learning (New Elective)

Course Outcomes

On completion of this course, the student will be able to:

CO1: describe the feedforward and deep networks

CO2:design single and multi-layer feed-forward deep networks and tune various hyper-parameters.

CO3: analyse performance of deep networks.

Introduction: Historical context and motivation for deep learning; basic supervised classification task, optimizing logistic classifier using gradient descent, stochastic gradient descent, momentum, and adaptive sub-gradient method.

Neural Networks: Feedforward neural networks, deep networks, regularizing a deep network, model exploration, and hyperparameter tuning.

Convolution Neural Networks: Introduction to convolution neural networks: stacking, striding and pooling, applications like image, and text classification.

Sequence Modeling: Recurrent Nets: Unfolding computational graphs, recurrent neural networks (RNNs), bidirectional RNNs, encoder-decoder sequence to sequence architectures, deep recurrent networks.

Autoencoders: Undercomplete autoencoders, regularized autoencoders, sparse autoencoders, denoising autoencoders, representational power, layer, size, and depth of autoencoders, stochastic encoders and decoders.

Structuring Machine Learning Projects: Orthogonalization, evaluation metrics, train/dev/test distributions, size of the dev and test sets, cleaning up incorrectly labeled data, bias and variance with mismatched data distributions, transfer learning, multi-task learning.

References:

1. Ian Goodfellow, **Deep Learning**, MIT Press, 2016.
2. Jeff Heaton, **Deep Learning and Neural Networks**, Heaton Research Inc, 2015.
3. Mindy L Hall, Deep Learning, VDM Verlag, 2011.
4. Li Deng, Dong Yu, **Deep Learning: Methods and Applications** Now Publishers Inc, 2009.

Head
संगणक विज्ञान विभाग
Department of Computer Science
दिल्ली विश्वविद्यालय / University of Delhi
दिल्ली–110007 / Delhi-110007