DEEP LEARNING LAB

(Professional Elective - III Lab)

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B.Tech IV Year I Semester CSE-DS

Course Outcomes:

Upon the Successful Completion of the Course, the Students would be able to:

1. Learn The Fundamental Principles of Deep Learning.
2. Identify The Deep Learning Algorithms for Various Types of Learning Tasks in various domains.
3. Implement Deep Learning Algorithms and Solve Real-world problems.

List of Programs:

1. Implementation of Linear Regression
2. Deep learning Packages Basics: TensorFlow, Keras and PyTorch
3. Implementation of Neural network
4. Build your own CNN from scratch for face recognition and try to achieve the highest possible accuracy on any dataset
5. Sentiment Analysis using LSTM
6. Language Modeling using RNN
7. Sentiment Analysis using GRU
8. Image Classification with Transfer Learning
9. Case Study: Implement all deep learning pre-trained models (GooLeNet, VGGNet, AlexNet, ResNet, Xception) on any dataset and analyze the accuracy.

TEXT BOOKS:

1. Deep Learning by Ian Goodfellow, Yoshua Bengio and Aaron Courville, MIT Press.
2. The Elements of Statistical Learning. Hastie, R. Tibshirani, J. Friedman, Springer.
3. Probabilistic Graphical Models. Koller, and N. Friedman, MIT Press.
4. Géron, Aurélien. Hands-on machine learning with Scikit-Learn, Keras, and TensorFlow: Concepts, tools, and techniques to build intelligent systems. O'Reilly Media, 2019.

REFERENCE BOOKS:

1. Bishop, C., M., Pattern Recognition and Machine Learning, Springer, 2006.
2. Yegnanarayana, B., Artificial Neural Networks PHI Learning Pvt. Ltd, 2009.
3. Golub, G., H., and Van Loan,C.,F., Matrix Computations, JHU Press,2013.
4. Satish Kumar, Neural Networks: A Classroom Approach, Tata McGraw-Hill Education, 2004.

Extensive Reading:

1.http://www.deeplearning.net

2.https://www.deeplearningbook.org/

3.https://developers.google.com/machine-learning/crash-course/ml-intro