

Machine Learning Lab (ECE Department)

The need for efficient processing and extraction of meaningful information from massive data has now become part of everyday life for taking informed decisions. In the ECE Department we have a distributed network of computers built using Apache Spark. This cluster of computers is capable of performing computations in a distributed manner. To handle such massive data efficiently and effectively we need hardware as well as software perspectives. Students are working on simulating various estimation algorithms over this distributed network.

Further, now a day's multimedia big data is readily available on the cloud using "store anywhere and access anywhere" model. The companies, viz., Flickr, Google are providing rich collection of internet images. Work is carried out currently for development of Hadoop based framework for image super resolution which exploits computational and storage efficiency of cloud. Our framework employs hash tables for mapping of patches in the target image from a database of internet picture collection.

Following are the details of Infrastructure available in the Machine Learning Lab.

Details of Hardware available:	
Details of Server	Intel (R) Xeon (R) CPU ES-2687W v3 @ 3.10 GHz X 16, 64GiB, 1 TB HDD, 64 bit OS (1 node), NVIDIA Quadro K620 GPU
Details of Nodes	Intel Core i7-4770 (3.40 GHz Octa-Core) processor, Graphics AMD Radeon HD 8570 2GB, 8GB DDR3-1600MHz, 1 TB HDD, 64-bit OS (5 nodes), NVIDIA Quadro K420 GPU
Details of Software available:	
MATLAB 2016 a	Parallel Computing Toolbox , Symbolic Math Toolbox, Signal Processing Toolbox
Theano 0.9.0, Python 3.5, Anaconda 4.2.0, Caffe 1.0, Spark 2.1.0, Hadoop 2.7.4	

Students are working on the following broad areas in this research center:

- Estimation over Distributed Networks
- Sentiment Analysis
- Parameter Extraction from Big-Data
- Big multimedia
- GPU computing
- Deep learning
- Image annotation
- Digital Image forensics