CS 4265: Big Data Analytics

3 Credit Hours

Prerequisite: CS 3305 and (CS 3410 or CSE 3153)

This course covers algorithms and tools that are needed to build MapReduce applications with Hadoop or Spark for processing gigabyte, terabyte, or petabyte-sized datasets on clusters of commodity hardware. A wide range of data algorithms will be discussed in this course.

CS 4267: Machine Learning

3 Credit Hours

Prerequisite: CS 3642

This course provides a broad introduction to machine learning and statistical pattern recognition including supervised, unsupervised, and ensemble learning. Topics include K-NN, Naïve Bayes Classifier, parametric and non-parametric methods, support vector machines, kernel machines, neural networks, clustering, dimensionality reduction, and model evaluation. The learning theory including bias/variance tradeoffs and large margins will be introduced. This course will also discuss recent applications of machine learning such as data mining, autonomous navigation, speech recognition, and text and web data processing.

CS 4270: Intelligent Systems in Bioinformatics

3 Credit Hours

Prerequisite: CS 3305 and (CS 3410 or CSE 3153)

Biological sciences are undergoing a revolution in how they are practiced. In the last decade, a vast amount of biological data has become available, and computational methods are playing a fundamental role in transforming this data into scientific understanding. Bioinformatics involves developing and applying computational methods for managing and analyzing information about the sequence, structure and function of biological molecules and systems. This course covers a wide range of machine learning, data mining, and computational algorithms to solve various bioinformatics research problems.