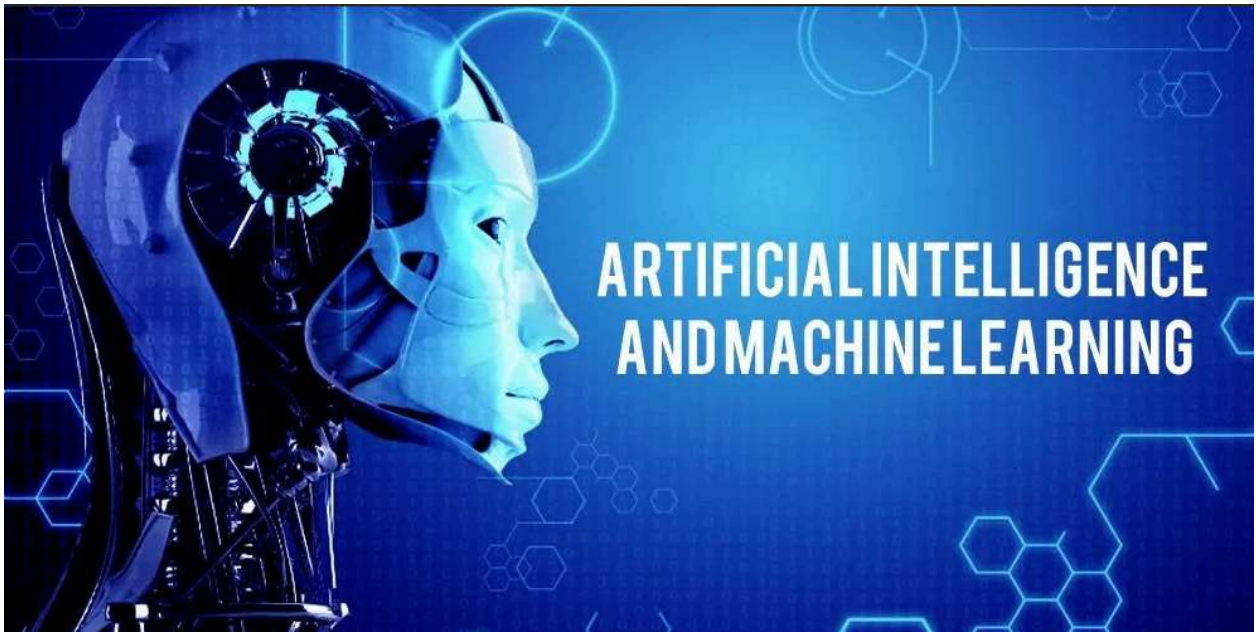
AI & Machine Learning



AI And Machine Learning

Learning Outcomes The students are expected to have the ability to:

Analyze existing algorithms as well as design novel algorithms pertaining to big data.

MODULE 1.

Contents Introduction: Randomized algorithms, Universal Hash Family, Probabilistic Algorithm Analysis, Approximation Algorithms, ε-Approximation Schemes. (5 lectures)

MODULE 2.

Sketching and Streaming: Extremely Small-Space Data Structures, CountMin Sketch, Count Sketch, Turnstile Streaming, AMS Sketch, Graph Sketching, Graph Connectivity (9 lectures)

MODULE 3.

MapReduce: MapReduce Algorithms in Constrains Settings such as small memory, few machines, few rounds, and small total work, Efficient Parallel Algorithms (7 lectures)

MODULE 4.

External memory and cache-obliviousness: Minimizing I/O for large datasets, Algorithms and data structures such as B-trees, Buffer trees, Multiway merge sort (7 lectures)