

EN.705 ARTIFICIAL INTELLIGENCE

Courses

EN.705.601. Applied Machine Learning. 3 Credits.

Machine Learning (ML) is the art of solving a computation problem using a computer without an explicit program. ML is now so pervasive that various ML applications such as image recognition, stock trading, email spam detection, product recommendation, medical diagnosis, predictive maintenance, cybersecurity, etc. are constantly used by organizations around us, sometimes without our awareness. In this course, we will rigorously apply machine learning techniques to real-world data to solve real-world problems. We will briefly study the underlying principles of diverse machine learning approaches such as anomaly detection, ensemble learning, deep learning with a neural network, etc. The main focus will be applying tool libraries from the Python-based Anaconda and Java-based Weka data science platforms to datasets from online resources such as Kaggle, UCI KDD, open source repositories, etc. We will also use Jupyter notebooks to present and demonstrate several machine learning pipelines.

EN.705.603. Creating AI-Enabled Systems. 3 Credits.

Achieving the full capability of AI requires a system perspective to effectively leverage algorithms, data, and computing power. Creating AI-enabled systems includes thoughtful consideration of an operational decomposition for AI solutions, engineering data for algorithm development, and deployment strategies. To realize the impact of AI technologies requires a systems perspective that goes beyond the algorithms. The objective of this course is to bring a system perspective to creating AI-enabled systems. The course will explore the full-lifecycle of creating AI-enabled systems starting with problem decomposition and addressing data, design, diagnostic, and deployment phases. The course will also cover ethics and bias in AI systems. The course includes a systems project that will encompass the full-lifecycle with interim milestones throughout the course. Homework assignments will be provided that involves python programming.