Course Code: W7072GW

Course Title: Machine Learning Rapid Prototyping with IBM Watson Studio

Description:

An emerging trend in AI is the availability of technologies in which automation is used to select a best-fit model, perform feature engineering and improve model performance via hyperparameter optimization. This automation will provide rapid-prototyping of models and allow the Data Scientist to focus their efforts on applying domain knowledge to fine-tune models. This course will take the learner through the creation of an end-to-end automated pipeline built by Watson Studio's AutoAI experiment tool, explaining the underlying technology at work as developed by IBM Research. The focus will be on working with an auto-generated Python notebook. Learners will be provided with test data sets for two use cases.

Objectives:

- Building a rapid prototype of Watson Studio AI
- Automated Data Preparation and Model Selection
- Automated Feature Engineering and Hyperparameter Optimization
- Evaluation and Deployment of AutoAI-generated Solutions

Prerequisites:

In order to be successful, you should have knowledge of:

- Data Science workflow, Data Preprocessing, Feature Engineering, Machine Learning Algorithms, Hyperparameter Optimization, Evaluation measures for models, Python and scikit-learn library (including Pipeline class)

Duration:

8.8 Hrs

Topics:

Building a rapid prototype of Watson Studio AI - Describe the benefits of AutoAI for rapid prototyping - Identify implementations of AutoAI - Become familiar with the Watson Studio platform - Build rapid prototypes using Watson Studio AutoAI - Generate a Python notebook of the prototype with one click Automated Data Preparation and Model Selection - Evaluate the data preprocessing steps for the use cases - Refine data preprocessing using the AutoAI-generated Python notebook - Examine the model selection outcome for use cases - Refine the Python notebook to make changes to the selected model Automated Feature Engineering and Hyperparameter Optimization - Explain how the Cognito algorithm can save time by automating feature engineering - Evaluate the automated feature engineering performance for the use cases - Describe several strategies for HPO in order of increasing soistication - Observe how changes to the model hyperparameters in the Python notebook affect the prototype's performance Evaluation and Deployment of AutoAI-generated Solutions - Evaluate the prototype for further development or deployment based on calculated performance metrics - Deploy the prototype using Watson Machine Learning

Audience:

This course is intended for practicing Data Scientists. While it showcases the automated AI capabilities of IBM Watson Studio with AutoAI, the course does not explain Machine Learning or Data Science concepts.