Course Syllabus

Introduction to Petroleum Data Analytics

Python Crash Course
- Data Types: bool, int, float, str, list, tuple, dictionary
- Control Statements
- Python for Data Analysis
  - Data Analysis (Numpy & Pandas)
  - Data Visualization (Matplotlib)

Introduction to Artificial Neural Networks

Machine Learning Algorithms in Python
- Partitioning
- Feature Scaling
- Artificial Neural Network
- Introduction to Scikit-Learn

Developing Python Code for Generating Synthetic Well Logs Using Machine Learning
- Data from a real field in North Sea
- Data importing
- Data preparation
- Data visualization
- Training/Calibration/Validation
- Deployment
Python for Petroleum Data Analytics

Instructor: Shahab D. Mohaghegh (Intelligent Solutions, Inc. & West Virginia University)

Description

Should operators develop their own Petroleum Data Analytic software tools, or should they purchase such products off the shelf from vendors? Many petroleum engineers in many companies ask this question these days. Regardless of the answer, the major issue that needs to be addressed is that the petroleum engineers and operating companies must develop a solid understanding of how such tools are developed in a practical (non-academic) context of real-world data.

Python is a general purpose and high-level programming language that is the most popular programming language for data science and specifically for data analytics. Python is an open source and free software development language with the most impressive library of Artificial Intelligence and Machine Learning algorithms. Python has proven to be the most useful platform for highly sophisticated Petroleum Data Analytics tools. If any petroleum engineer or any operating company ever considers developing any Petroleum Data Analytics tools, Python has proven to be one of the best choices.

This course will help petroleum engineers that are interested in Petroleum Data Analytics tools to get the required insight into how such tools can be developed and used to solve practical problems using Artificial Intelligence and Machine Learning technologies. This course will introduce Python, assists petroleum engineers in developing data science related codes, and help them in building practical AI-based applications to solve realistic petroleum engineering related problem using real field data (from an offshore field in North Sea) during the course.