Dr. Mariana Rodriguez-Buno

Computational Scientist

ExxonMobil Upstream Research Company

Date: Tuesday, Sept. 13, 2022

Time: 7 - 7:50 pm

Zoom Meeting ID: 970 7656 5407

Password: 477211

Machine Learning Applications in Upstream

Abstract: Due to complexity and scale, managing and engineering a modern hydrocarbon asset is extremely challenging. Bringing necessary data from multiple different sources and analyzing it in a relatively short period of time to provide actionable insight to field operators' is the key to optimize performance. Supervised machine learning methods can provide effective tools for predicting uplift from operational decisions. Proper choice of features, novel use of available data and evaluation of several machine learning technologies enabled the development of an efficient and robust mechanism for identifying and prioritizing operational actions to achieve production uplift. We trained time-progressive predictive models using historical well test rates as targets and well operating conditions as features. These models were then integrated into an existing rule based production optimization recommender system to provide the uplift estimates for every recommendation, hence optimize and prioritize operating strategies.

Biography: Mariana Rodriguez is a Computational Scientist in the ExxonMobil Upstream Research Company in Computational and Data Sciences. She holds a PhD from MIT in Computational Sciences and Civil Engineering, a Msc. from MIT in Civil Engineering, and is a Fulbright scholar. Dr. Rodriguez has carried out research in computational physics modeling a wide area of problems with direct applications to energy. Dr. Rodriguez has also a vast experience in engineering consulting, and teaching Fluid Dynamics and Physics courses. Dr. Rodriguez joined ExxonMobil in 2019, and since then she has worked on computational fluid dynamics, computational thermodynamics, multi-phase flow, non-newtonian fluids flow, software development, scientific computing, data science and machine learning problems.