Reliable Models for determining the Pressure-Volume-Temperature PVT Properties using Machine Learning Techniques

INTRODUCTION

- PVT properties are important in the **oil and gas industry** for reservoir modeling and production optimization.
- Traditionally, PVT properties are determined through **laboratory experiments** which can be **time-consuming** and **expensive.**

GOAL

Develop **reliable model** for Pressure-Volume-Temperature (PVT Properites) prediction.

How is it done today?

Either using **expensive laboratory measurement** or less accurate **statical correlation** are used for PVT properties estimation.

Limitations/ Challenges

- The PVT measurements are **expensive** and **time-consuming**.
- Number of correlations were created to forecast the PVT properties based on inputs including reservoir pressure, temperature, and hydrocarbon gravities.
- Even though, there are considerable **differences** between the reported results and the real values.

Vision of success and how will success be measured?

- Using the **average absolute percentage error (AAPE)** and coefficient of determination (**R-value**) to check the new model accuracy.
- Figure out best machine learning model compared to a number of other methods, like popular PVT correlation and other regression methods.

Identify your business partners, and stockholders

- Oil and Gas Companies

Outline the analysis

- Data preparation
- Provide new accurate model for PVT properties prediction amongst other machine learning techniques.
- Comparison with the old existing results.

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