

Predicting the Estimated Ultimate Recovery of an Oil Well

1.) What is the business problem?

Estimating the ultimate recovery of an oil well is one of the most critical tasks a Reservoir Engineer would have to make. The earlier a Reservoir Engineer could predict the EUR of an oil well the sooner the oil and gas company could predict the profitability of the well. The task is to produce the oil production well

2.) Who are the intended stakeholders, and why is this problem relevant to them?

The intended stakeholders are the oil companies who own the well and the reservoir engineer

3.) Where are the datasets available from?

Volve field Production dataset csv file from Equinor

4.) What data science approaches do you anticipate that you will use to model the business problem as a data science problem?

Time series modelling

5.) How do you anticipate that the intended clients will use the results of your CP2 to address the original business Problem?

The well operator can use this information to decide whether the well is profitable or not and, they can use this to benchmark different well designs.

Modeling Hydraulic fracture propagation

1.) What is the business problem?

Create a hydraulic fracturing model using models created by hydraulic fracturing modeling software

2.) Who are the intended stakeholders, and why is this problem relevant to them?

The intended stakeholders are Reservoir Engineers who can input this hydraulic fracture model to their reservoir simulation and predict the EUR of the well from the design.

3.) Where are the datasets available from?

GOFHER Hydraulic fracturing simulator

4.) What data science approaches do you anticipate that you will use to model the business problem as a data science problem?

CNN

5.) How do you anticipate that the intended clients will use the results of your CP2 to address the original business Problem?

The Reservoir Engineer can use this model to validate the hydraulic fracturing design and see which designs maximizes the recoverable oil.

Drilling Vibration Detection

1.) What is the business problem?

Drill string vibration can be classified into three types axial, torsional and lateral all of which leads to drilling equipment damage and as much as possible should be minimized. The solution is to detect these vibration types during

drilling operation using drilling parameters such as bit rpm, weight on bit, mud weight, vibration data, etc. and adjust the drilling parameters accordingly.

2.) Who are the intended stakeholders, and why is this problem relevant to them?

The driller and drilling engineers are the stakeholders. These individuals are interested in minimizing vibration to minimize non-productive time and minimize drilling equipment damage.

3.) Where are the datasets available from?

Google data search

4.) What data science approaches do you anticipate that you will use to model the business problem as a data science problem?

Event detection algorithms

5.) What data science approaches do you anticipate that you will use to model the business problem as a data science problem?

Driller and Drilling Engineer can use deployed model to stop drilling vibration in real time