BC Montney Shale Data Analytics for Shale Sweep Spot Identification and Well Completion Optimization – A journey of Machine Learning Technology Application by A Geologist

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The Journey

In the popular Big Bang Theory TV Series, the theoretical physicist Sheldon tried to predict the name of a newcomer – the most popular first name in the world is "Mohammad", the most popular last name is "Li", so newcomer's name is most likely "Mohammad Li". It was a joke, but it often happens on us when we introduce new technologies into our field.

AI drives vehicles, machine learning pickups people by scanning their faces, Google Home briefs us schedule and weather before we leave home, and so on. In oil industry, it has been years that many top notch professionals tried to make a breakthrough in data analytics on G&G interpretation and well completion optimization. But so far, the end results has not been satisfying

I started my journey on the machine learning application in the shale sweep spot identification and HZ well completion optimization 1.5 years ago. My learnings will be shared. My go-forward suggestions hopefully inspire more people looking at the huge potentials to make our shale development more efficient.

In the presentation, a brief shale data analytics workflow will be shared. Examinations on four machine learning methods will be compared. Realistic expectations will be set for maximizing optimal data analytics outcome. (Yes, sometime when you ask too much, you could get less) The common mistakes will be listed. Road map for making machine learning data analytics for every G&G and well drilling/completion engineering professional will be reveal.

Conclusions

By revealing the mysteries surrounding the modern computing technologies and making them into simple software tools, the AI and machine learning will assist geoscientists find best acreages/spots to drill into shale sweet spot. The huge existing engineering data will enable engineers optimizing drilling and completion factors to increase well production and cut back per well costs.