

AI FOR GEOMECHANICS APPLICATIONS

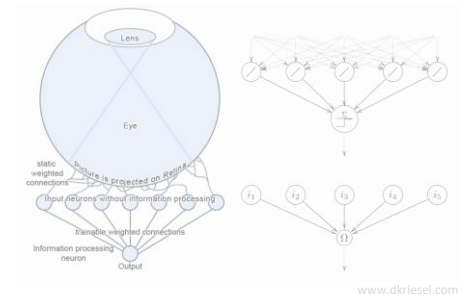
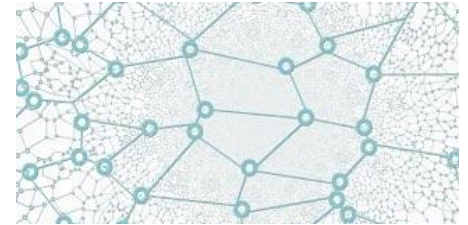
One Day Seminar, Schlumberger EUR (United Kingdom & Continental Europe)

November 21st, 2019

Schlumberger Abingdon Technology Centre (UK)

Artificial Neural Networks (ANN) have been introduced in the early 1940's concurrently with programmable computers. Early applications wanted to simulate human brain's capabilities (Artificial Intelligence - AI) reproducing models of neurological networks in biological systems (Artificial Neural Networks). ANNs allow to work massive data in parallel and can reorganize themselves. They are therefore able to learn and compensate error by generalizing and associating data after successful training. This process, also called Machine Learning (ML), is receiving increasing attention in the O&G industry where a multitude of data have been acquired, interpreted and stored since many decades. Other ML algorithms have been introduced since then. This seminar will introduce the ANN as a component of the machine learning process with specific focus on geomechanics applications. Theoretical aspects will be shortly introduced. Advantages and limitations will be discussed. Examples of applications of ML algorithms in geomechanics and reservoir modelling will also be proposed.

The seminar will be opened by Gyan N. Pande, Emeritus Professor at Centre for Civil & Computational Engineering, Swansea University (UK) and founder President of the International Centre for Computational Engineering (IC2E). Prof. Pande has pioneered the introduction of ANN and ANN constitutive based modelling in geomechanics. His works on ANNs in geomechanics trace back to early 2000's. He will introduce the basic theory and present examples of applications. Other applications from Schlumberger Abingdon Technological Center will also be shown to provide a more comprehensive overview of AI for geomechanical applications.



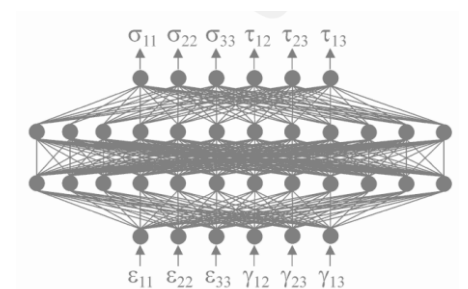
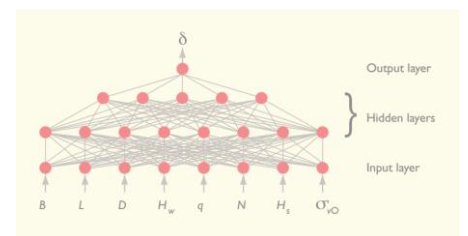
Morning Session (9:00 - 12:15)

- 9:00 – 9:15 Opening & Motivation, V De Gennaro
- 9:15 – 9:45 Geomechanics in the digital space and potential use of AI, S. Kiswa
- 9:45 – 10:30 Introduction to ANN in geomechanics and civil engineering, G.N Pande
- 10:30 – 10:45 Break
- 10:45 – 11:30 Applications of ANN in geomechanics and civil engineering: lessons learned from the previous NN boom, G.N Pande
- 11:30 – 12:00 Future of data ingestion in geomechanics analytics, K. Fisher & I. Diaz
- 12:00 – 12:15 Discussion

Lunch break (12:15 – 14:00)

Afternoon Session (14:00 - 16:30)

- 14:00 – 14:45 Self-supervised representation learning for subsurface models, Ph. Lang
- 14:45 – 15:30 ML applications in Petroleum Geomechanics, A. Rodriguez-Herrera
- 15:30 – 15:45 Break
- 15:45 – 16:15 Analytics in Petroleum Geomechanics, I. Diaz & A. Rodriguez-Herrera
- 16:15 – 16:30 Discussion and Closure



We look forward to meeting you in [Schlumberger Abingdon Technology Centre](#).

The seminar will also be live streamed. You are welcome to invite your team to townhalls or contact your Schlumberger SIS Account Manager to organize joint sessions. Please confirm your participation by e-mail to vdegennaro@slb.com specifying if you will attend in Abingdon Technology Centre or remotely. Upon confirmation of your participation you will receive details of the venue and live stream connection.