

DATA ANALYTICS AND MACHINE LEARNING FOR GEOSCIENTISTS

19 OCTOBER 2021

CPD POINTS

8 GSSA
1 SACNASP

ABOUT THE WORKSHOP

This one-day virtual workshop introduces the theory and practical applications of Data Analytics and Machine Learning within the geoscience discipline.

You will learn popular machine learning algorithms, principal component analysis, and geospatial modelling which are the critical methods for data-driven techniques and understanding complex patterns in data. As you build prediction and classification models, you will learn how to train algorithms using training data so you can predict the outcome for future datasets.

REGISTRATION

Members - **R1,000**

Non-Members - **R1,500**

Students/Retired/Academic - **R500**

REGISTER NOW



COURSE INFORMATION

Specifically, our one-day course will teach you to:

- Effectively prepare data for Data Analytics and Machine Learning applications in order to ensure that conclusions drawn are trustworthy and reliable
- Gain insights from data using a lean workflow that incorporates outlier detection, data debiasing and imputation, feature engineering, and spatiotemporal modeling
- Understand the assumptions and limits of data precision, scale and coverage
- Create classification, prediction and spatial uncertainty models

By the end of the workshop, you will have a firm understanding of:

- Classification of lithofacies from drill core data
- Prediction of in-situ metal grades using geological and geochemical data
- Creation of multivariate spatial and uncertainty models
- Visualisation of gridded data

Prerequisites - to be completed before class

- Subject matter expertise: Geology and Geostatistical Concepts
- Coding: Basic Python proficiency OR Completion of datacamp's "Introduction to Data Science in Python" course (Link: <https://campus.datacamp.com/courses/intro-to-python-for-data-science/chapter-1-python-basics?ex=1>)
- Familiarity with Github - (Link: <https://www.youtube.com/watch?v=RGOj5yH7evk>)
- Statistics- Read Chapter 2 of "An Introduction to Statistical Learning with Applications in R" by Gareth James (Link: <https://www.statlearning.com/>)

ABOUT THE SPEAKER



Prof. Glen Nwaila from the University of the Witwatersrand (@LinkedIn: Dr Glen Nwaila)

Glen received his BSc (Hons.) Geology from the University of Johannesburg, MSc in Chemical Engineering from the University of Cape Town, and a Doctor rerum naturalium degree in Geology with distinction from the University of Würzburg, Germany. He has more than 13 years of experience in research, teaching and industrial work in the field of economic and mining geology, geometallurgy, machine learning and hydrometallurgy.

Glen worked and collaborated with research and industry centers worldwide such as South Africa, Canada, DRC, Germany, Ghana, Sweden, USA, the United Kingdom, and Zambia. Currently, Glen holds the position of as Adjunct Professor at the University of the Witwatersrand. His research interests are (1) genesis and evaluation of ore deposits, (2) machine learning applied to geology and mineral processing, (3) metal accounting, and (4) process optimization in hydrometallurgical plants. His most recent work focuses on impacts of digital transformation in the mining industry and the move towards data banks for process simulation and augmented reality.