بسم الله الرحمن الرحيم

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تم رفع هذه الرسالة بواسطة / حسام الدين محمد مغربي

بقسم التوثيق الإلكتروني بمركز الشبكات وتكنولوجيا المعلومات دون أدنى مسئولية عن محتوى هذه الرسالة.

ملاحظات : لا يوجد

APPLICATION OF NON-PARAMETRIC REGRESSION TECHNIQUES TO ESTIMATE THE RESERVOIR PERMEABILITY OF BAHARIYA FORMATION

By

Hesham Mokhtar Ali El Shahat

A Thesis Submitted to the
Faculty of Engineering at Cairo University
in Partial Fulfillment of the
Requirements for the Degree of
MASTER OF SCIENCE
in
Petroleum Engineering

Faculty of Engineering, Cairo University
Giza, Egypt
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Under the Supervision of

Prof. Dr. Mahmoud Abu El-Ela

……………………...............…………….

Professor of Petroleum Engineering
Faculty of Engineering, Cairo University

Prof. Dr. Ahmed Hamdy El-Banbi

……...........………………………….

Professor and Chair of Petroleum and Energy
Engineering Department
The American University in Cairo

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Approved by the Examining Committee

____
Prof. Dr. Mahmoud Abu El Ela Mohamed, Thesis Main Advisor

____
Prof. Dr. Ahmed Hamdy El Banbi, Advisor
- Professor of Petroleum Engineering (The American University in Cairo)

____
Prof. Dr. Khaled Ahmed Abdel-Fattah, Internal Examiner

____
Eng. Nabil Abdel-Sadek Abdel-Aleem, External Examiner
- Chairman of General Petroleum Company

Faculty of Engineering, Cairo University
Giza, Egypt
2022

Name: Hesham Mokhtar Ali El Shahat
Date of Birth: 25/09/1988
Nationality: Egyptian
E-mail: hesham.mokhtar@gpc.com.eg
Phone: +2 01210718755
Address: Nasr City, Cairo, Egypt

Registration Date: 01/03/2016
Awarding Date: / /2022
Degree: Master of Science
Department: Petroleum Engineering

Supervisors

Prof. Dr. Mahmoud Abu El-Ela
Prof. Dr. Ahmed Hamdy El-Banbi

Examiners

Prof. Dr. Mahmoud Abu El-Ela Mohamed (Thesis Main Advisor)
Prof. Dr. Ahmed Hamdy El-Banbi (Advisor)
- Professor of Petroleum Engineering (The American University in Cairo)

Prof. Dr. Khaled Ahmed Abdel-Fattah (Internal Examiner)
Eng. Nabil Abdel-Sadek Abdel-Aleem (External Examiner)
- Chairman of General Petroleum Company

Title of Thesis

Application of Non-Parametric Regression Techniques to Estimate the Reservoir Permeability of Bahariya Formation

Key Words

Alternating Conditional Expectation (ACE), Artificial Neural Networks (ANN), Bahariya Formation, Permeability Estimation, Western Desert of Egypt

Summary

The objective of this work is to introduce a systemic workflow for a regional understanding of Bahariya reservoir characteristics, identification of rock units, and reservoir permeability. Specifically, the Alternating Conditional Expectation (ACE) algorithm and the Artificial Neural Networks (ANN) were applied on well log data from about 100 cores covering the different geological and depositional features. This approach was applied to different testing wells addressing different geological and sedimentary features with variable log characteristics from the convention high-resistivity to low-contrast (LRLC) behaviors. The established permeability profiles exhibit high correlation coefficients for training and testing datasets. Additionally, it shows high accuracy that matches the field experience even with LRLC characteristics.

Disclaimer

I hereby declare that this thesis is my own original work and that no part of it has been submitted for a degree qualification at any other university or institute.
I further declare that I have appropriately acknowledged all sources used and have cited them in the references section.

Name: Hesham Mokhtar Ali El Shahat **Date**: / /2022

Signature:

Dedication

To **my parents**, my wife, my beloved girls (***Shams*** and ***Lilian***),

my sisters (***Doaa*** and ***Abeer***), and my brother (***Ahmed***).

This modest work is a sign of my love to you!

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Hesham Mokhtar Ali

Cairo, Egypt, 2022

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