



Reza Falahat

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Career Summary

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| 2015 - Present | Sahand University of Technology, Tabriz, Iran
Associate Professor and Director of International Affairs (Full Time) |
| 2018 - Present | Project Director for NIOC-EXP (Exploration Directorate), Iranian Offshore Oil Company (IOOC) and Pars Oil and Gas Company (POGC) (Part Time) |
| 2016 - Present | Advisor for variety of oil and gas companies (Part Time) |
| 2016 - 2018 | Nargan Amitis Energy Development (NAED), Tehran, Iran
Director of Subsurface Services and Head of Geophysics Group |
| 2016 – 2018 | ERC Equipoise Limited, Limited, London, UK
Senior Consultant Geophysicist and ERCE representative in Iran |
| 2012 – 2016 | ERC Equipoise Limited, London, UK
Senior Reservoir Geophysicist |
| 2014 - 2015 | Imperial College London, UK
Supervising Post-Graduate students |
| 2011 - 2012 | Heriot-Watt University, Edinburgh, UK
Team Leader and Research Associate at Edinburgh Time Lapse Project (ETLP), Reservoir Geophysics Group |
| 2004 - 2008 | Sahand University of Technology, Iran
Lecturer, Faculty of Mining Engineering |

Awards and honours

- **Best Technologist** at Sahand University of Technology, 2023
- Selected as one of the **Best Applied Researchers in the country** (Iran) in the area of industry relations (within the highest amount of contract with industry), 2022
- Selected as one of the **Best Project Director in the country** (Iran). My project was within the best selected projects in country, 2021

- **Distinguished Applied Researcher** at Sahand University of Technology (in industry relations), and the winner of the best project at the university, 2021 and 2022
- **Best Researcher** at Sahand University of Technology (the highest amount of contracts with oil and gas companies), 2020,
- **EAGE, SEG, Thomsen/BP award**, 2010-2011,
- **First class honours** – first rank in the university during MSc and BSc periods

Education Summary

- 2008 – 2011** **PhD Reservoir Geophysics, Institute of Petroleum Engineering, Heriot-Watt University, Edinburgh, UK,**
Subject of PhD: Monitoring of reservoir injection/production using 4D seismic
- 2001 – 2004** **MSc Natural resource exploration, Sahand University of Technology, Tabriz, Iran, First top student**
- 1997 – 2001** **BSc Natural resource exploration, Sahand University of Technology, Tabriz, Iran, First top student**

Work History

2015 – Present **Sahand University of Technology, Tabriz, Iran**

Associate Professor and Director of International Affairs

- Director of International Affairs at Sahand University of Technology
- Lecturer at Seismic Interpretation, Rock Physics, Reservoir Monitoring, Reservoir Modelling, Well logs analysis
- Head of Petroleum Exploration department
- Supervisor of PhD, MSc and BSc students

2018 – Present (Part Time base), Project Director at NIOC-EXP (Exploration Directorates), Iranian Offshore Oil Company (IOOC) and Pars Oil and Gas Company (POGC)

1- Oil and Gas exploration at North-West of Iran for NIOC-EXP (2019-2021)

This project includes Remote Sensing, GIS, Structural Geology, Sedimentology, Sequence Stratigraphy, Petroleum Geochemistry and Geophysics. **30+ personnel** were assisting me in this project. 6 Provinces in North West Iran was covered in this project. Two target area were proposed for drilling.

2- Reservoir Geophysics, 4D Seismic Analysis and Geomechanics in Foroozan Oil Field for IOOC (2020-present)

AVO modelling, rock physics study, seismic inversion (deterministic, stochastic, EI and EEI inversions), reservoir characterization, 4D feasibility study in 0D, 1D and 3D, Geomechanical impact on reservoir static and dynamic modelling. **10+ personnel** were assisting me this project. This field is selected to acquire 4D seismic data.

3- Seismic QI in South Pars Gas Field for POGC (2021-present)

AVO modelling, rock physics study, seismic inversion (deterministic, stochastic, EI and EEI inversions), seismic reservoir characterization on South Pars Gas field (oil and gas layers). This is the **biggest gas reservoir in the world**. Both 3D and 2D seismic data were used in this project.

4- Static Modelling in Ahvaz oil field for NISOC (2018-2019)

The reservoir static (geological) model is analysed and re-built in this giant oil field (the third biggest oil reservoir in the world). This field contain 650+ wells with a massive volume.

2016 – Present (Part Time base), Advisor for variety of oil and gas companies:

Nargan Amitis Energy Development (NAED),

International PetroAsmari Co. (IPAC)

Pars Oil and Gas Company (POGC),

2016 – 2018 Nargan Amitis Energy Development (NAED), Tehran, Iran

Director of Subsurface Services and Head of Geophysics Group

NAED as a multidisciplinary oil and gas company has given an integrated view for all departments to straightforwardly carry out integrated projects such as full field studies, IOR/EOR projects and preparing MDP/FDP. As Director of Subsurface Services, I was managing NAED services on different disciplines of subsurface engineering such as Geophysics, Geology, Petrophysics, Reservoir Engineering and Drilling and Production Engineering. At the same time, I did act as head of Geophysics Department. My key responsibility was to develop this department to run exploration and field development projects from geophysics point of view.

2016 – 2018 ERC Equipoise limited, London, United Kingdom

Senior Consultant Geophysicist and ERCE representative in Iran

I assisted ERC Equipoise to be introduced and act in Iranian oil and gas industry.

2012 – 2016 ERC Equipoise limited, London, United Kingdom

Senior Reservoir Geophysicist

Working on the multi-discipline company gave me the opportunity to work on different exploration and field development projects. I have been directly involved on more than 20 projects in the oil and gas industry entire the world. I was specialist at the interpretation of 2D, 3D and 4D seismic data, both qualitatively and quantitatively, rock physics analysis, Seismic Geomechanics, AVO and Azimuthal AVO modelling, seismic inversion, forward seismic modelling, velocity model building, depth conversion, volume estimation and auditing projects, and integration of the geophysical data with the geological, petrophysical and engineering data for the field exploration, field extension and development well proposal, and application of the seismic data for the IOR/EOR studies.

Some of selected projects:

- Seismic inversion, Rock Physics studies, AVO modelling and Prospectivity analysis in Senegal, Madagascar and Offshore Congo. These projects end up with proposing the exploration well locations
- Net Pay estimation using the seismic dataset in Nile delta, North Africa to identify the best places for drilling a few development wells.
- Full field study in the South East Asia, including the core and well log analysis, seismic interpretation and inversion, depth conversion, reservoir model building (static/dynamic), history match and forecasting (in a multi discipline group)
- Rock Physics studies, AVO modelling, amplitude analysis, seismic geomechanics and seismic inversion in the West Africa for the field development, Italy, Senegal, GOM, North America, North Sea and Middle East
- Field extension and well planning in Offshore Congo
- Velocity model building and depth conversion in North Sea and Central America
- Involve in a variety of Expert Witnesses in North America, Europe and Africa
- Field development studies using the advanced geophysical methods in East Europe
- Review of the new development well project using Pre-Stack and Post Stack seismic data with two separate seismic datasets in North Africa
- Oil and Gas reserve estimation and prospect evaluation using different methods and datasets in North Sea, West and Africa, Golf of Mexico, East Europe and SE Asia
- Auditing of various fields entire the world

2014 – 2015 Imperial College, London Petroleum Geophysics

Supervising Post Graduate students in the field of reservoir geophysics

2010 – 2012 Heriot-Watt University Time Lapse Project (ETLP)

Team Leader and Research Associate at Edinburgh Time Lapse Project (ETLP), Reservoir Geophysics Group, Institute of Petroleum Engineering

I was working on the Joint Industrial Project (ETLP). This project was directly guided by ETLP sponsors (more than **20 oil and gas companies**).

Some of my activities:

- Team Leader of the Pressure and Saturation Inversion Group
- Develop 4D seismic techniques and tools, and apply the developed techniques on the real dataset, some examples: Schiehallion, Foinaveon, An'Teallach and Girasol oil/gas fields
- Research topics:
 - Monitoring of gas injection for storage, disposal and IOR purposes
 - Principal parameters that control 4D seismic signals
 - 4D seismic inversion techniques and attributes analysis
- Advisor for PhD and MSc students and teaching assistant at Reservoir Geophysics Group

2004 – 2008 Sahand University of Technology, Iran

Lecturer, Faculty of Mining Engineering: Exploration Geochemistry, Remote Sensing/GIS

Professional workshops and courses (attended on)

- Tectonic Controls on Basin Development and Petroleum Systems, John Underhill, September 2015, Nautilus, Edinburgh, UK
- Seismic Reservoir Characterisation, EBN and GDF SUEZ, November 2014, Utrecht, The Netherlands
- Time-Lapse Seismic, EAGE, March 2015, Oslo, Norway
- Hampson-Russell Azimuthal Attributes (ProAZ) Workshop, CGG, November 2014, London, UK
- A Practical Introduction to Seismic Inversion, John Savage, May 2014, Nautilus, London, UK
- Geological Interpretation of Well Logs, Jenny Garnham, March 2014, Nautilus, Aberdeen, UK
- Seismic and Sequence Stratigraphy for Play Prediction and Basin Analysis, George Bertram, December 2013, Nautilus, Edinburgh, UK
- An Objective Approach to Seismic Acquisition, Processing and Reprocessing, Rob Hardy, October, 2013, Nautilus, London, UK
- Reservoir Static modelling and seismic reservoir characterisation, Phillipe Doyen, October 2009, Aberdeen, UK

Selected Publications and Presentations

- Behzad Nasrnia, Reza Falahat, Ali Kadkhodaie, 2024, Log-based estimation of magnitude, azimuth and causes of anisotropy using a committee machine-based model, Journal of Earth Science Informatics.
- Behzad Nasrnia, Reza Falahat, 2024, Introducing a Simplified Rock Physics Model to Estimate Shear Velocity to Consider the Geometry of Pore Spaces and Minerals, Journal of Acta Geophysica.
- Saghi Jalini, Reza Falahat, 2024, Feasibility Study of Monitoring of Water Injection into an Iranian Oil Fields Using 4D Seismic Data, Journal of Petroleum Research.
- Behzad Nasrnia, Reza Falahat, Ali Kadkhodaie, Ali Gholami Vijouyeh, 2023, A committee machine-based estimation of shear velocity log by combining intelligent systems and rock-physics model using metaheuristic algorithms, Journal of Engineering Application of Artificial Intelligence.
- Esmael Makarian, Maryam Mirhashemi, Ayub Elyasi, Danial Mansourian, Reza Falahat, Ahmed E. Radwan, Ahmed El-Aal, Cunhui Fan, Hu Li, 2023, A Novel Directional-Oriented Method for Predicting Shear Wave Velocity Through Empirical Rock Physics Relationship Using Geostatistics Analysis, Journal of Scientific Reports.
- Saghi Jalini, Reza Falahat, 2023, Analyzing of Rock Physics Models for 3D and 4D Seismic Feasibility Study in the Carbonate Reservoirs and Developing an Hybrid Algorithm (under review).
- Aboulfazi Pourhassan Heris, Reza Falahat, 2023, Pore pressure estimation of one of the gas fields in southwestern Iran using well log and seismic data, Journal of Petroleum Research

- Hassan Bagheri and Reza Falahat, 2021, Fracture permeability estimation utilizing conventional well logs and flow zone indicator, Journal of Petroleum Research
- MohammadHossein GhojehBeyglou1, Reza Falahat and Enayatollah Ranjineh Khojasteh, 2022, A Geostatistical analysis approach for facies and porosity modeling of a heterogeneous sandstone reservoir to compare four practical stochastic methods, Journal of Applied and Regional Geology (ZDGG)
- Mehdi Sadeghi, Navid Amini, Reza Falahat, Hamid Sabeti and Nasser Madani, 2021, Global stochastic seismic inversion using turning bands simulation and co-simulation, Journal of Acta Geophysica
- Ahsan Leisi and Reza Falahat, 2021, Investigation of Some Porosity Estimation Methods Using Seismic Data in One of the South Iranian oil fields, Journal of Petroleum Research,
- Medi sadeghi, Navid Amini, Reza Falahat, Naser Madani and Hamid Sabeti, 2021, 3D Acoustic impedance modeling using turning bands simulation method in an oil field in SW of Iran, Journal of Geophysics
- Mehdi Sadeghi, Nasser Madani, Reza Falahat, Hamid Sabeti and, Navid Amini, 2021, Hierarchical reservoir lithofacies and acoustic impedance simulation: Application to an oil field in SW of Iran, Journal of Petroleum Science and Engineering
- Jalini S. and Falahat R., 2020. A Novel Algorithm to Estimate Mineral Elastic Properties and Pore Aspect Ratio in the Carbonate Reservoirs, Journal of Applied Geophysics
- Dalvand M. and Falahat R., 2020. A New Rock Physics Model to Estimate Shear Velocity Log, Journal of Petroleum Science and Engineering
- Hamed Amraei and Reza Falahat, 2020. Improved ST-FZI Method for Permeability Estimation to Include the Impact of Porosity Type and Lithology, Journal of Petroleum Exploration and Production Technology
- Taghizadeh M., Falahat R. and Tabatabaei-Nejad A., 2019. Geomechanical modeling for CO2 geologic sequestration in Asmari reservoir– South of Iran, Arabian Journal of Geosciences
- Cheraghsahar E., Falahat R. and Tabatabaei-Nejad A., 2019, Geomechanical impacts of Reservoir Pressure and Temperature changes on the Wellbore Stability, Journal of Petroleum Research.
- Falahat, R., and Farokhnia, F., 2020. Rock physics modelling of the carbonate reservoirs: A log-based algorithm to determine the pore aspect ratio. Journal of Applied Geophysics,
- Shiri S. and Falahat R., 2019, Rock Physics Modelling and 4D Seismic Feasibility Study in one of the Iranian Carbonate Reservoirs, Journal of Applied Geophysics,
- Shiri S. and Falahat R., 2019, Rock Physics Modelling and 4D Seismic Feasibility Study in one of the Iranian Carbonate Reservoirs, 81st EAGE Conference and Exhibition, London, UK
- Mehdi Sadeghi., Navid Amini, Reza Falahat, Hamid Sabeti, Nasser Mandani, 2019, 3D Acoustic Impedance Modeling using Turning Bands Co-Simulation and Linear Multi-Attribute Transform, 81st EAGE Conference and Exhibition, London, UK
- Falahat R., MacBeth C., and Shams A. 2018, Seismic response to injected gas into reservoir for storage and enhanced oil recovery purposes, Journal of Geophysics, Iran

- Falahat R., 2018, The reservoir scale gas distribution and its accurate seismic response, 18th conference of Geophysics, Tehran, Iran (**Invited Speaker**).
- Haghshenas Sh., Falahat R. and Simjoo M., 2018, Evaluation of Different Rock Physics Models to calculate Dry Rock Modulus in one of the Iranian Southern Oil Reservoirs, 18th conference of Geophysics, Tehran, Iran
- Falahat R., MacBeth C., and Shams A. 2018, A practical 4D seismic attribute to estimate saturation and pressure changes arising from reservoir production and injection, Journal of Petroleum Geomechanics (JPG), Vol 2.
- Falahat R., McQuaid S., 2017, Nodal Inversion: An Optimisation Algorithm to Reduce the Run Time during the Seismic Inversion, AAPG/SEG International Conference and Exhibition, London, UK
- Falahat R., MacBeth C., and Shams A. 2017, A practical 4D seismic attribute to estimate saturation and pressure changes arising from reservoir production and injection, Second National Conference on Petroleum Geomechanics, Tehran, Iran (**Key Speaker**)
- Falahat R., 2016, Seismic Interpretation: How Quantitative We Can Be?, 17 Conference of Geophysics, Tehran, Iran, (**Invited Speaker**)
- Falahat R., Obidegwu D., Shams A. and MacBeth C., 2014, The interpretation of amplitude changes in 4D seismic data arising from gas exsolution and dissolution, Petroleum Geoscience, Vol. 20, No. 3, P. 303-320
- Falahat R., Shams A. and MacBeth C., 2013, Adaptive scaling for enhanced dynamic interpretation of 4D seismic data, Geophysical prospecting, Vol. 61, No. s1, P: 231-247.
- Falahat R., Shams A. and MacBeth C., 2013. An interpretation of the 4D seismic response to gas exsolution and dissolution, 75th EAGE Conference and Exhibition, London, UK
- MacBeth C., Huang Y. and Falahat R., 2013, 4D Seismic Interpretation with Frequently Acquired, Multiple Time-lapsed Surveys, Second EAGE Workshop on Permanent Reservoir Monitoring, 2013, Stavanger, Norway, July 2013
- Falahat R., Shams A. and MacBeth C., 2011, Towards quantitative evaluation of gas injection using time-lapse seismic, Geophysical prospecting, Volume 59, Issue 2, pages 310–322
- Falahat R., Shams A. and MacBeth C., 2011, Adaptive engineering-based scaling for enhanced dynamic interpretation of 4D seismic, 73rd EAGE Conference, Vienna, Austria
- Falahat R., Shams A. and MacBeth C., 2010, Towards quantitative evaluation of gas injection using time-lapse seismic, 72nd EAGE Conference, Barcelona, Spain
- Mohammadzade M. J. and Falahat R., 2007, Application of ETM satellite images in enhancement of alteration halos and lithological units discrimination in Mianeh-East Azerbaijan, Journal of Crystallography and Mineralogy, Iran, No2, 439-459
- Mohammadzade M. J. and Falahat R., 2005, Analysis and integration of airborne geophysical data and their correlation with ETM image for detecting alteration zones in Mianeh (East Azerbaijan), Journal of Geosciences. GSI Iran Vol: 4 No:58