JASSEM ABBASI

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ABOUT ME

I am Jassem Abbasi, a Research Scientist with over six years of expertise in Scientific Machine Learning and reservoir engineering. Passionate about innovation, I develop AI-driven solutions for complex scientific and engineering problems, advancing sustainable energy technologies by bridging academia and industry.

QUALIFICATIONS

Programming
Scientific Software Development
Machine Learning | Deep Learning
Optimization | Inverse Calculations
Applied Mathematics | Statistics
Data Science | Data Analytics
Reservoir Engineering/Simulation
Computational Fluid Dynamics (CFD)
Flow in Porous Media | Thermodynamics

SKILLS

- ECLIPSE, CMG, MRST (...)
- COMSOL, OpenFoam
- Petrel
- PVTi, PVTsim (...)
- Optimization (History-matching)

- Python, C#, MATLAB, (...)
- TensorFlow, PyTorch, JAX
- Sklearn, SciPy, (...)
- Visualization (Matplotlib, ...)
- Git (Version Control)
- Azure ML
- Databases (MySQL)
- GPU Computing
- OOP (Object Oriented Programming)
- PowerBI

- WP Web Development
- Adobe Photoshop
- Digital Marketing

LANGUAGES

English
Norwegian

CURRENT ACTIVITY

Application of Physics-informed Machine Learning for Modelling of Multiphase Flow Processes in Porous Media

> 3D simulation of two-phase flow (CO_2 flooding) in multiscale fractured cores. See: https://arxiv.org/abs/2410.20801

EXPERIENCES (selected)

ETH Zürich (2024)
ETH AI Center – Visiting Researcher

EQUINOR ASA, Norway (2022) - (Intern)
Geoscience/Reservoir Simulation Engineer

ZODAN SOLUTIONS LTD., UK (2019-2020)
Scientific Software Developer

SHIRAZ UNIVERSITY/PETROAZMA (2016-2018)
Reservoir [Simulation] Engineer/Researcher

PETROTIRAZIS PTED. (2016) - (Intern)
Scientific Software Developer

EDUCATION

UNIVERSITY OF STAVANGER (2021- Dec. 2024)
Scientific Machine Learning (PhD)

SHIRAZ UNIVERSITY (2014-2016)
Reservoir Engineering (M.Sc.)

PETROLEUM UNIVERSITY OF TECHNOLOGY (2010-2014)
Reservoir Engineering (B.Sc.)

HONORS & AWARDS (selected)

2024 Awarded a prestigious research commercialization fund from RCN **(~0.5 MNOK)**
2024 Awarded as the **Best PhD Candidate** of The Year by **SPE Stavanger**
2023 Awarded an innovation research stipend
2019 3 Years Distinguished Researcher of EOR Research Centre at Shiraz University

PUBLICATIONS (selected)

Under Review (2025): Can Physics-Informed Neural Networks Effectively Model Shock Fronts in Multiphase Flow in Porous Media? A Methodology Review

ML4PS @ NeurIPS (2024): History-Matching of Imbibition Flow in Multiscale Fractured Porous Media Using Physics-Informed Neural Networks (PINNs) →

SPE Journal (2024): Application of Physics-Informed Neural Networks for Estimation of Saturation Functions from Counter current Spontaneous Imbibition Tests →

Neurocomputing (2024): Physical Activation Functions (PAFs): An Approach for More Efficient Induction of Physics into Physics-Informed Neural Networks (PINNs) →

Energy and Fuels (2023): Simulation and Prediction of Spontaneous Imbibition at Early and Late Times Using Physics-Informed Neural Networks →

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EXPERIENCES

ETH Zürich, Switzerland (2024)
ETH AI Center – Visiting Researcher

Collaborating with the host researchers regarding the challenges in modelling the flow problems with shock front discontinuities.

University of Stavanger, Norway (2021-2024)
PhD Research Fellow in Petroleum Technology/ Artificial Intelligence

Research Physics-Informed Neural Networks (PINNs) and their application in solving forward and inverse problems related to flow in porous media. Also, developing technology for more efficient usage of multi-fidelity datasets using PINNs.

Equinor ASA, Norway (2022)
Subsurface Engineer | Reservoir Simulation (intern)

Worked on a business and engineering case involving the tie-back of two offshore gas fields, addressing both economic and technical aspects.

> I successfully completed the numerical simulations for the project and delivered statistical engineering and financial insights to the management team to support decision-making.

ZODAN Solutions LTD., UK (2019-2020)
Scientific Software Developer

Developed commercial software for simulating the thermodynamics of subsurface geofluids, including oil, gas, and brine (in C#).

Shiraz University/PetroAzma (2016-2018)
Reservoir Simulation Engineer | Research Assistant

> Conducted core-to-field scale studies of improved recovery methods across multiple oil/gas fields, including screening techniques, experiment design and evaluation, parameter extraction, upscaling, and geological analysis (ECLIPSE, CMG).

> Responsibilities included geological analysis, field-scale history-matching, development evaluation, pilot design, proposal preparation (ECLIPSE, CMG, Petrel).

> Involved in PVT study of a gas condensate field.

> Serving as a research assistant on academic projects, while advising several master's students.

PetroTirazis PTED. (2016)
Software Developer (intern)

Developed software tailored to the petroleum industry, designed to support fast-track planning during the early stages of field development projects.

CERTIFICATES (selected)

Machine Learning
Stanford University - 2020

Scientific Machine Learning
By KTH and Brown universities - 2023

Fundamentals of Scalable Data Science
By IBM (hosted by Coursera), 2020

Fundamentals of Digital Marketing
Google, 2021

PRESENTATIONS (selected)

2024 ML4PS Workshop at NeurIPS
2024 InterPore Norway Branch
2024 Energy Norway
2022 SPE SPWLA
2022 EAGE EUROPEC

TEACHING (selected)

Scientific Machine Learning (workshop)
University of Campinas, 2024 - Lecturer

Advanced Fluid Phase Calculations (workshop)
Shiraz University, 2019 - Lecturer

Advanced MATLAB Programming (workshop)
Shiraz University, 2018 - Lecturer

ECLIPSE Reservoir Simulation Software
Shiraz University, 2015-2017 - Lecturer

PVTi and PVTsim Fluid Modelling Software
Shiraz University, 2016 – Lecturer

VOLUNTEER (selected)

2024 Session Chair at EAGE Annual Conference in Oslo (ML & AI)
2022 Organizer at Pint of Science Norway
2018-Present Journal and Conference Reviewer
2013-2014 Editor in Chief at a student scientific journal
2012 A member of student scientific association committee during my B.Sc.

REFERENCES

Pål Østebø Andersen
Supervisor, University of Stavanger | pal.andersen@uis.no

Siddhartha Mishra
Supervisor, ETH Zurich | siddhartha.mishra@sam.math.ethz.ch

Farokh Shoaei
Manager, Equinor | ffk@equinor.com

Ameya D. Jagtap
Supervisor, Worcester PTech. Inst. (WPI), USA | ajagtap@wpi.edu