# Mostafa Tabatabaei

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## Education

**University of Tehran** **Sep 2018 – Sep 2022**
*Bachelor of Science in Petroleum Engineering* *GPA: 3.6/4*

## Research Interest

- Machine Learning | Deep Learning
- Optimization
- Underground Gas Storage (UGS)
- Enhance Oil Recovery (EOR)

## Publications

- Mostafa Gilavand, Zahra Almahmoodi, **S. Mostafa Tabatabaei**, Fatemeh Eghbali, Behnam Sedaee, Shahrzad Sajadi, "New dynamic methods of reservoir cut off determination at heterogeneous reservoir: Azadeghan field case study", 3rd International Conference on the New Technologies in the Oil, Gas and Petrochemical Industries.

## Research Experience

**Carbon Capture and Storage** | *Python, Curve Fit* **Sep 2021 – May 2022**
- Conducted a comprehensive study of capillary pressure and relative permeability models.
- Collected over 90 capillary pressure and 60 relative permeability experimental data for $CO_2$ - brine from a thorough literature review to support the study.
- Utilized Python programming and curve fitting techniques to evaluate 11 capillary pressure models and six relative permeability models for the best fit.
- Co-authored a research paper detailing the study's findings and submitted it to a peer-reviewed journal for publication (under review by Environmental Earth Sciences).

**EOR Screening** | *Python, Machine Learning, Optimization* **Nov 2021 – Aug 2022**
- Co-authored a research paper on building a neural network model for predicting most suitable EOR methods in reservoirs, with a focus on optimizing the model using the Sparrow Search Algorithm (SSA).
- Gathered and pre-processed over 200 EOR samples to train the model.
- Utilized Keras framework to build the neural network and optimized it using SSA to improve accuracy.
- Demonstrated proficiency in machine learning techniques and optimization algorithms.

**Well Placement Optimization** | *Python, Eclipse, Optimization* **Sep 2022 – Present**
- Developed a reservoir simulation model using Eclipse software to represent the Yadavaran oil field in Iran.
- Utilized two optimization algorithms, Particle Swarm Optimization (PSO) and Sparrow Search Algorithm (SSA), to determine the optimal locations for production and injection wells under various scenarios.
- Developed and implemented a Quality Map concept to enhance accuracy and efficiency in well placement optimization.

**Oil Field Development Strategies: A Global Analysis** **Nov 2022 – Jan 2023**
- Conducted extensive research to gather data on oil fields worldwide with a focus on recovery factor.
- Analyzed the gathered data to identify successful oil fields and their associated development strategies, including government policies and laws.
- Identified patterns and trends in the data to develop insights into effective field development strategies.
- Contributed to the report's recommendations for improving the development of oil fields in Iran.

**Material Balance in Hydrate-capped Gas Reservoirs** | *Coure Project* **Mar 2021 – May 2021**
- Conducted research on material balance in Hydrate-capped Gas Reservoirs as a course project in Reservoir Engineering II.
- Studied the formation and stability conditions of gas hydrate reservoirs.
- Researched and presented on the mathematical derivation of material balance for these reservoirs.
- Presented the findings of the study in a comprehensive report and delivered an oral presentation to the course instructor and classmates.

**Sudoku Solver Application** | *Course Project* **Jan 2019**
- Developed a Python program with GUI to solve Sudoku puzzles.

## Work Experience

**Internship** **July 2021 – Sep 2021**

*Persia Oil and Gas Company* *Tehran, Iran*

- Analyzing the effect of various operational parameters on multi-phase flow behavior by OLGA software

**Research Assistant** **Jan 2021 – Present**

*Institute of Petroleum Engineering (IPE), Tehran University* *Tehran, Iran*

- Supervisor: Dr. Behnam Sedaee

**Teaching Assistant** **Jan 2022 – Jun 2022**

*Institute of Petroleum Engineering (IPE), Tehran University* *Tehran, Iran*

- Reservoir Engineering II
- Instructor: Dr. Behnam Sedaee

## Honors and Awards

**Top Rank Certification at Faculty of Engineering (FOE)** **Sep 2021**

- Ranked $4^{th}$ among $25^{th}$ student

## Technical Skills

**Programming/Scripting**: Python, Visual Basic, LaTeX
**Developer Tools**: VS Code, Linux, GitHub
**Frameworks**: Numpy, Pandas, Tensorflow, Scikit-learn, Matplotlib
**Softwares**: Saphir, OLGA, Microsoft Office
**Soft skills**: Teamwork, Project Management, Fast Learner

## Languages

**Persian**: Native
**English**: Fluent

## Relevant Course

- Reservoir Rock Properties (4/4)
- Reservoir Engineering I, II (4/4)
- Enhanced Oil Recovery (4/4)
- Well Testing (4/4)
- Well Loging (4/4)
- Production Engineering (4/4)

**References, Further information, and Proofs are available upon Request**