

# Leonardo Fonseca Reginato

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## EDUCATION

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### Master of Science, Mines and Petroleum Engineer

University of Sao Paulo - USP (GPA: A)

2022

### Bachelor of Engineering, Petroleum Engineer

University Catholic of Santos - Unisantos (GPA: 8.3)

2018

## PUBLICATIONS

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**Reginato, L. F.,** Gioria, R. D. S., & Sampaio, M. A. (2023). *Hybrid Machine Learning for Modeling the Relative Permeability Changes in Carbonate Reservoirs under Engineered Water Injection*. **Energies**, 16(13), 4849.

**Reginato, L. F.,** Pedroni, L. G., Compan, A. L. M., Skinner, R., & Sampaio, M. A. (2021). Optimization of ionic concentrations in engineered water injection in carbonate reservoir through ANN and FGA. **Oil & Gas Science and Technology**—Revue d'IFP Energies nouvelles, 76, 13.

**Reginato, L. F.,** Carneiro, C. C., Gioria, R. S., & Pinto, M. S. (2019). Prediction of wettability alteration using the artificial neural networks in the salinity control of water injection in carbonate reservoirs. In **Offshore technology conference Brasil**. OTC.

**Reginato, L. F.,** Ranazzi, P. H., Santos, D. F., & Pinto, M. A. S. (2018). Modelagem e simulação de injeção de água de baixa salinidade em reservatório carbonático do pré-sal. *Anais*.

## EXPERIENCES

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### Research Technician

University of Texas at Austin

2024 - Present

- Leading the development of deep learning models for the classification of cryptobenthic fish species using image and video data.
- Investigating the alignment between model-driven classifications and traditional taxonomic guidelines to enhance model interpretability.
- Supporting lab operations and mentoring junior researchers in AI applications within marine science.

### Machine Learning Engineer

2RP Net Ltda.

2021 - 2024

- Led a team of five in developing AI solutions for a major Brazilian retail company's digital marketing, implementing a clustering algorithm for customer segmentation that reduced campaign costs by 30%.
- Developed CI/CD pipelines using Jenkins and GitHub Actions for ML model deployment, performance monitoring, and auto-retraining.
- Integrated models into Docker containers, adhering to best practices in data version control and dependency management with Poetry.
- Developed an AI-based client scoring system using MLlib in the Oracle cloud environment, including engineering a decision tree classifier that enhanced the client's strategic decision-making and became their primary scoring mechanism.
- Led a project on credit card fraud detection, improving performance through Artificial Neural Networks (ANNs).
- Seamlessly integrated AI solutions into the company's infrastructure, ensuring consistent retraining for optimal performance.

## Research Assistant

University of Sao Paulo

2019 - 2021

- Conducted numerical simulations of Brazilian carbonate reservoirs for R&D projects.
- Developed a hybrid ML technique combining K-Means clustering and ANNs for modeling permeability curves.
- Successfully applied AI techniques to predict changes in relative permeability curves under enhanced oil recovery (EOR) scenarios.
- Collaborated with Petrobras engineers, enhancing scientific problem-solving skills.

## LANGUAGES

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### Portuguese

Native

### English

Fluent (TOEFL 92 pts)

### Spanish

Intermediate

## TECHNICAL SKILLS

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### Programming Languages

Python (Pandas, Polars, Numpy, Tensorflow/Keras, Scikit-learn, PyTorch, Openai, OpenCV, XGBoost, Matplotlib, Seaborn, Plotly, Flask, FastAPI), Spark/Pyspark, R, SQL, Matlab and Unix Shell.

### Databases

Oracle, Hive, Impala, Postgre, SQL Server, SQL Lite

### Cloud Environment

Google Cloud Platform, Oracle Cloud Infrastructure

### Softwares & Tools

Git, Git-Flow, Docker, Kubernetes, Tableau, Power BI, Microsoft Azure, Apache NIFI, Superset, Airflow, Kafka, Data Version Control, Poetry, MLflow.

## GRANTS & AWARDS

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### Petrobras R&D Fellowship

Master's - 2019

### Academic Excellence Scholarship

Undergraduate - 2018

### South America & Caribbean SPE Petrobowl Regional Qualifier

Society of Petroleum Engineers - 2017

### Top 8 in SPE Petrobowl Final Championship

Society of Petroleum Engineers - 2017

## CONFERENCES

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**Reginato L. F.**, Prediction of wettability alteration using the artificial neural networks in salinity control of water injection in carbonates reservoirs - **Offshore Technology Conference Brazil**. Oral presentation 2019.

**Reginato L. F.**, Modeling and simulation of low salinity water injection in pre-salt carbonate reservoir - **III Conepetro, National Petroleum Engineer, Natural Gas and Biofuels Congress**. Oral presentation 2018.

PetroBowl regional qualifier. **Buenos Ayres - Exploration and Production of Unconventional Resources Symposium**. 2017.

PetroBowl world final. **San Antonio - Annual Technical Conference, and Exhibition**. 2017.

PetroBowl world final. **Dubai - Annual Technical Conference, and Exhibition**. 2016.

## RESEARCH PROJECTS

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A Comprehensive Fish Taxonomy System with K-Means and Deep Neural Networks. **Research Collaborator** - University of Texas at Austin 2023.

Conservation Efforts Coupled with Data Science: Predicting IUCN Data Deficient Category within Elasmobranchs. **Research Collaborator** - Indiana State University 2022.

Application of Machine Learning Techniques for modeling of relative permeability in Engineered Water Injection in Carbonate Reservoirs. **Master's Thesis** - University of São Paulo 2022.

Proactive Strategies in Reservoir Production with Water Injection Using Smart Wells Control. **Undergraduate Thesis** - University Catholic of Santos 2017.

## CERTIFICATES

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### Applied Machine Learning in Python

2024 - University of Michigan

### Build a DataScience Web App with Streamlit

2024 - Coursera

### Machine Learning Pipelines with Azure ML Studio

2024 - Coursera

### Deep Learning (Keras) - Image Processing

2023 - Alura

### MLOps: Machine Learning and APIs

2023 - Alura

### Machine Learning Model Evaluation

2022 - Alura

### Machine Learning for Fraud Detection

2022 - Alura

## OTHER ACTIVITIES

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### Student Mentoring

Diego H. P. Santos (2023) - SENAI, Project: AI-Based Application for Customer Classification and Lead Prediction

Rafael Mattos (2023) - SENAI, Project: Data Pipeline optimization for Data Mesh Architecture

### Teaching Assistant

Numerical Simulation of Oil and Gas Reservoir, University of São Paulo

### Peer Reviewing for Science Journals

Energy Report, Elsevier

### Thesis Defense Committee

**Reginato L.F.;** Ferreira J.V. Committee member in Petroleum Engineer bachelor's degree (2020). Faveri B.S. Comparação da injeção de surfactantes, polímeros e solução ASP pela configuração de poços line drive. Undergraduate Thesis - University of São Paulo.

Carrión R.; **Reginato L.F.** Committee member in Petroleum Engineer bachelor's degree (2019). Vieira Y.R.C. Método dos Vórtices Discretos em Python Aplicado à Engenharia de Petróleo. Undergraduate Thesis - University of São Paulo.

**Reginato L.F.;** Schaefer M.F.L. Committee member in Petroleum Engineer bachelor's degree (2019). Camargo T.S.A. Estudo da alteração da molhabilidade em rochas carbonáticas sob injeção de água calibrada. Undergraduate Thesis - University of São Paulo.

**Reginato L.F.;** Carneiro C.C. Committee member in Petroleum Engineer bachelor's degree (2019). Amaral J.G.S.P. Injeção com Self-Organizing Maps: Comparação de Abordagens Aplicada à Densimetria Gramma. Undergraduate Thesis - University of São Paulo.

Ranazzi P.H.; **Reginato L.F.** Committee member in Petroleum Engineer bachelor's degree (2018). Shimabukuro E.E. *Substituição de simuladores de fluidos em metodologias de ajuste de histórico automático com uso da regressão simbólica.* Undergraduate Thesis - University of São Paulo.