

Internship in Reservoir Engineering

Summary

- **Length:** 4 to 6 months
- **Location:** 232 Avenue Napoléon Bonaparte, RUEIL-MALMAISON, 92500, France
- **Reference:** RP-2021-03
- **Starting Date:** March-December 2021
- **Internship paid and compliant with school conventions**

Job Overview

Title of the Internship:

ESP diagnostic and optimization through Machine Learning

Intern profile:

Final year student enrolled in a master's degree program with an oil reservoir engineering, thermodynamic or geosciences option.

Objectives:

This internship will be performed in Beicip-Franlab.

Based on literature review, the student will build and test algorithms to monitor the behavior of ESP pumps and try to anticipate failures. To do so, a large dataset from ESPs is available. Depending on the findings and progress of the student, other pattern recognition applications could be studied in the frame of the internship.

Main tasks undertaken during the internship:

- Literature review of ESP pattern recognition analysis
- Analysis of available ESP datasets
- Reproduction of existing pattern recognition algorithms
- Propose a dedicated algorithm

First, the student will review literature on ESP monitoring and pattern recognition, to get familiar with existing practices and the potential of applying machine learning methods to this subject. The ESP data from an internal study will then be analyzed, for the student to understand the specific issues encountered in this case. This analysis will guide him for focusing on the more adapted methods, in the light of the literature review.

Then, the first step is to try implementing the more adapted algorithm (from the literature review) on the ESP data and the issues encountered in this specific case. Successful or not, this first part will be followed by an analysis of the outcomes: if failure, what can be modified in the algorithm to make it work? if success, to what extent can we rely on it, and what are the possible enhancements? The third part will be the elaboration of a dedicated algorithm, and if possible, to try to code a first version of it.

The internship will be supervised by two senior engineers and support from experts in Beicip.

Software used

- Python, R
- MS Excel