

Rock core orientation method by image analysis

Possible to orientate rock core objectively and automatically

Overview

Cylindrical rock sample (rock core) taken from a well is analyzed for underground resources exploitation. Analysis of rock core can be used to estimate subsurface material and to measure physical property of formation in a simple way at low cost. Moreover, if the orientation of rock core at in-situ status is known, it is expected to estimate information on the formation, such as the direction of crustal stress, the anisotropy of permeability and the direction of subsurface fault.

There is a conventional method to orientate rock core by tracing the borehole image taken by logging and matching it with the surface image of the rock core. This method takes a long time and leads to a subjective conclusion since the orientation is determined visually.

This invention is about a method to orientate rock core by image analysis, which enables orientation in a shorter time with an objective process than conventional method.

Product Application

The orientation of rock core is an important element that allows following analyses:

- ❑ Direction of crustal stress
- ❑ Direction of anisotropy in permeability
- ❑ Direction of faults

IP Data

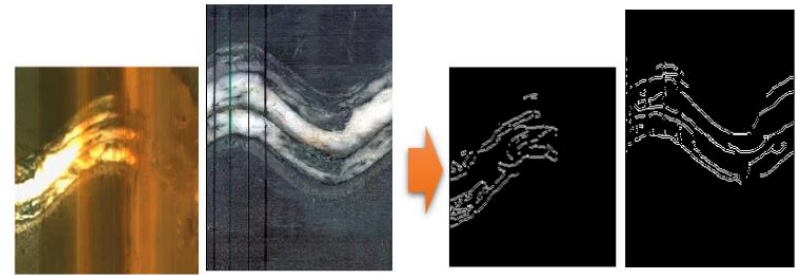
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Borehole

Rock core

Borehole

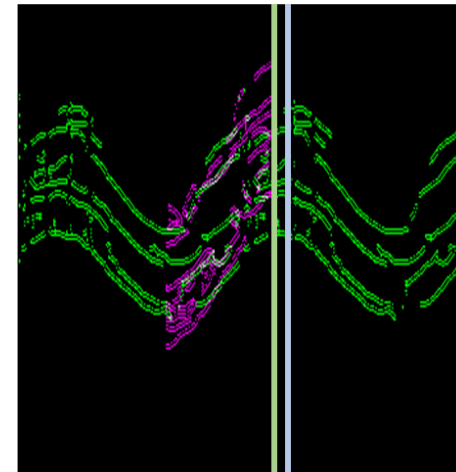
Rock core



Experimental result

Features of a borehole and rock core images were extracted and orient a rock core.

⇒ **Result : Difference of core orientation is $-12,3^\circ$**



We are aiming for higher accuracy by machine learning.

Contact