

Subsea Digital: IA a Serviço da Identificação Automática de Anomalias em Equipamentos Submarinos

João Carrilho¹, Paulo Ivson², Melissa Lemos², Romeu Ferreira², Flavia Pacheco Teixeira da Silva¹, Ana Cristina Ferreira¹

¹ Petrobras (joaocarrilho@petrobras.com.br, fpacheco@petrobras.com.br, ana.ferreira@petrobras.com.br);

² Instituto Tecgraf da PUC-Rio (psantos@tecgraf.puc-rio.br, melissa@tecgraf.puc-rio.br, romeu@tecgraf.puc-rio.br)

In the Oil and Gas Exploration and Production, Subsea area presents several challenges related to managing distributed data and assessing real-world conditions of underwater equipment.

Typically, data and documents are organized in large distributed databases, archives, data lakes, and characterized by large volume and variety. Data can be classified as structured, semi-structured or unstructured, dealing with complex information related to risers, flowlines, equipment, technical specifications. One of the aims of this research is to create a subsea engineering platform on top of a cloud environment that allows easy integrated access to data between existing databases and document repositories to boost the support planning, execution and operations in Libra domain. This work presents how artificial intelligence techniques are approached in this context, facilitating data integration, data enrichment and access via intelligent semantic search interfaces. In addition, this project focuses on detecting anomalies and inconsistencies in the equipment within the subsea arrangement. The approach involves reconstructing the real conditions of underwater installations using laser scanning, photogrammetry, and AI with a 3D sensor. This work also presents how we develop automatic or semi-automatic strategies for verifying equipment integrity and planning operations based on the results obtained from these scans.

KEYWORDS: Data integration, Laser Scanning, Machine Learning, Deep Learning, Natural Language Processing, Computational Geometry

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