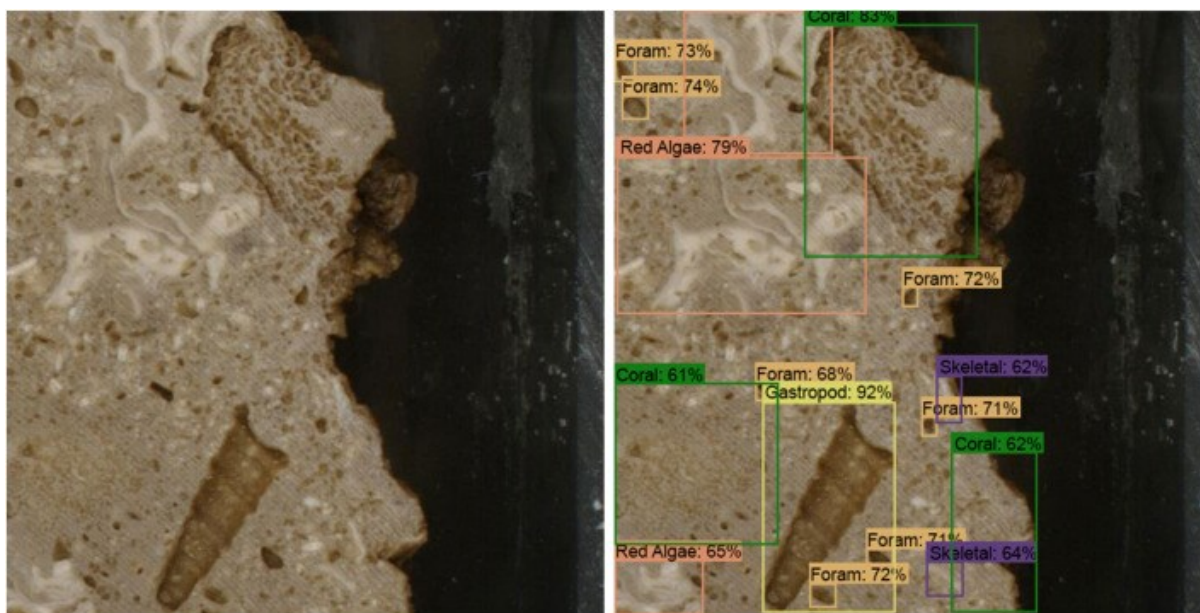


Seminario

Drilling Down the Data: A Deep Learning Dive into IODP Cores

Thursday, 23 October 2025 – 16:30, Aula Arduino

Relatore: **Prof. Cédric John** - QMUL, United Kingdom



The Integrated Ocean Drilling Program (IODP) has generated an extraordinary archive of core data essential for understanding Earth's geological history, yet interpreting this information remains challenging due to data complexity, scale, and subjectivity. My research group addresses these challenges—particularly in heterogeneous carbonate rocks—by applying deep-learning computer vision to automate and enhance geological core interpretation. Using convolutional neural networks (CNNs), transfer learning, and generative models such as GANs, we accelerate and improve the accuracy of core analysis, transforming resistivity images into realistic core photographs and reducing dependence on expert interpretation. To overcome limited datasets, we employ generative oversampling and semi-supervised learning, achieving high accuracy even with minimal labelled data. Together, these advances demonstrate how deep learning has evolved from a supporting tool to a transformative force in geology, capable of delivering rapid, systematic, and reproducible insights into Earth's subsurface.

Proponente: **Prof. Alessandro Fontana**