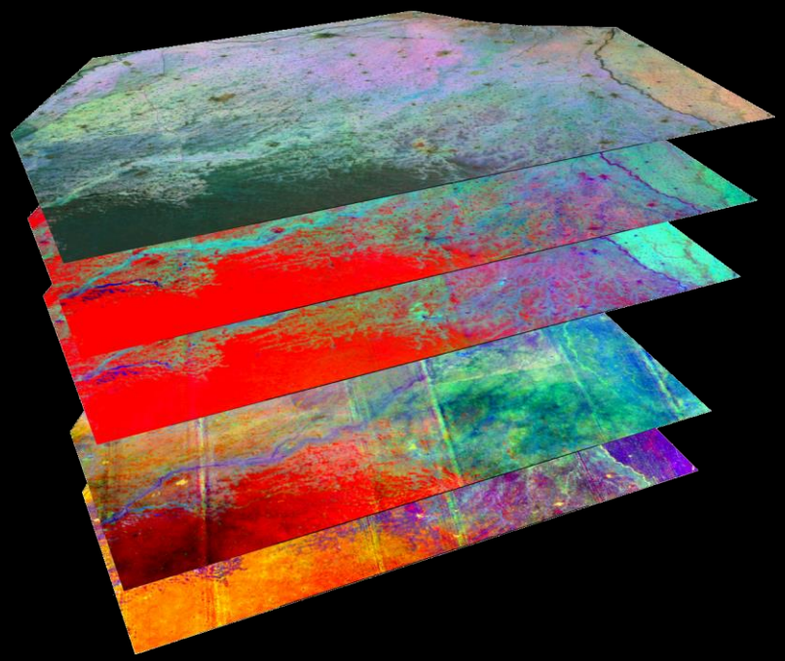
First practical workshop on advanced computational archaeology

Application of machine learning and deep learning algorithms for the detection of archaeological sites and features using satellite Big Data within cloud, parallel and virtual computing frameworks.



30th of October to 9th of November 2018,

Catalan Institute of Classical Archaeology

Plaça d'en Rovellat, s/n, 43003 Tarragona

Organisation: H.A. Orengo and J. M. Palet

This first workshop in advanced computational archaeology aims at archaeologists with experience in the use of remote sensing, GIS and other geospatial tools. Places are limited to 5 students. A week of intensive practical training will combine short presentations on the topics with long hands-on sessions designed to provide the students with a clear understanding of the techniques and how to apply them in different study areas and situations.

Programme

Working with massive and large-scale datasets: virtual machines, Docker images, parallelisation and cloud computing.

Lecture-based seminar with practical examples on how and when to use different computing methods according to the analysis at hand and access to resources.

Large-scale Multitemporal satellite imagery analysis (multispectral and SAR) for palaeolandscape reconstruction using cloud computing.

Software: Google Earth Engine, GRASS GIS Languages: JavaScript

Seminar introducing multitemporal satellite data analysis.

Practical with GEE in which the students will learn to create simple algorithms to create multitemporal multi-band images and composites under different environmental conditions to enhance the visibility of archaeological features.

Several seminars on the use of advanced algorithms for the detection of archaeological features.

Practical sessions with GEE and GRASS applying advanced algorithms for the detection of archaeological features. Algorithms include raster operations, filters, spectral decomposition techniques, and micro-relief analysis procedures.

Machine learning and deep learning applied to the detection of archaeological sites and features.

Software: Google Earth Engine platform, OTB, TensorFlow, Jupyter, CoLab Languages: Python, JavaScript

Practical sessions in which several Machine Learning methods (including Random Forest, SVM and CART) and Deep Learning methods such as Neural Networks for the detection and classification of archaeological features will be tested using a combination of software and computing methods.

ICAC Institut Català d'Arqueologia Clàssica

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