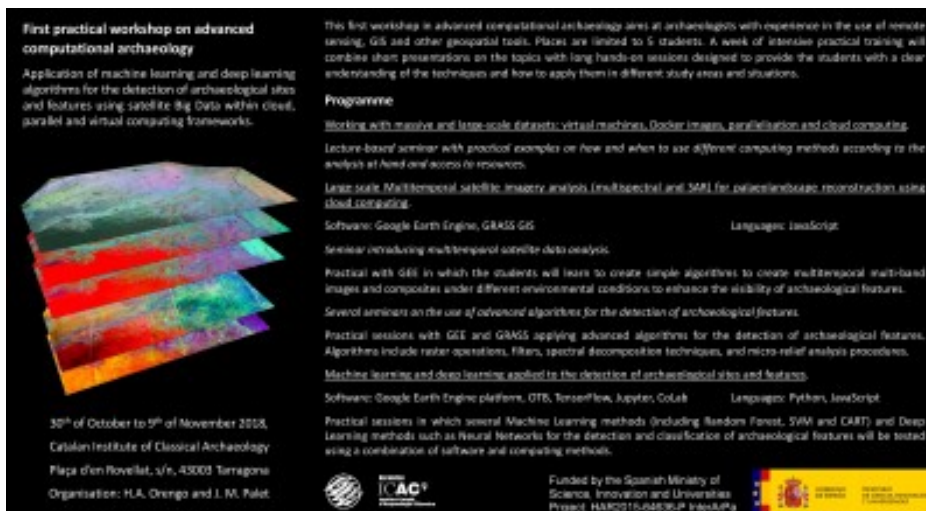


# First Practical Workshop on Advanced Computational Archaeology

Hèctor A. Orengo and Josep Maria Palet, members of the **Research Group on Landscape Archaeology** (ICAC) organize, from October 30 to November 9, a workshop on Advanced Computational Archaeology. This is one of the dissemination activities planned in the **InterArPa** project, funded by the Spanish Government **R+D program** (MINECO, HAR2015-64636-P).

The first edition of the Workshop on Advanced Computational Archaeology is aimed to archaeologists with experience in using remote sensing, GIS and other **geospatial tools**. An intensive practical training that combines brief **presentations** on specific topics with long **practical sessions** that will allow participants to deepen in the computing techniques and understand its application in different areas and study situations.



**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.

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 their presentations on the topic 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 of field and access to resources.

Large scale Multitemporal satellite imagery analysis: Unsupervised and SVM for paleolandscapes reconstruction using cloud computing.

Software: Google Earth Engine, GRASS GIS  
Languages: JavaScript

Session 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, QGIS, 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.

30<sup>th</sup> of October to 9<sup>th</sup> of November 2018,  
Catalan Institute of Classical Archaeology  
Plaça d'en Rovellat, s/n, 43003 Tarragona  
Organisation: H.A. Orengo and J.M. Palet

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Project HAR2015-64636-P InterArPa

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