Work with us!

Postdoctoral research on archaeological sites detection based on multispectral satellite imagery.

We are searching for excellent candidates with a **PhD in Computer Science, Remote Sensing or similar field** interested in conducting research in archaeological sites detection based on applying machine learning techniques on multispectral aerial images.

The context of this project is an ongoing collaboration between the Catalan Institute of Classical Archaeology (ICAC) at Tarragona and the Computer Vision Center (CVC) at Barcelona.

The contract is linked to the project [Mapping Archaeological Heritage in South Asia (MAHSA)](#) funded by the Arcadia Fund and developed as a collaboration between the University of Cambridge, The University Pompeu Fabra and the Catalan Institute of Classical Archaeology.

Project description

This project will investigate **novel machine learning algorithms to automatically detect archaeological sites** from the information available on data provided by different and complementary satellite sensors. ICAC R&D will provide expertise in archaeological sites characterization and the know-how acquired in the development a previous archaeological sites detection system, CVC will provide expertise in image fusion, image-based detection and classification and deep learning.

This position has a clear research transfer and deployment profile. Based on previous results in the topic of archaeological site detection (Orengo *et al.* 2020, https://doi.org/10.1073/pnas.2005583117), this new development will update previous research with deep learning techniques, new sources of information, more scenarios, exhaustive validation and finally it will be deployed in a cloud infrastructure to disseminate these new tools among the archaeological community.

Responsibilities

The primary tasks and responsibilities of the researcher are:

− Review the relevant literature and related works.

− Design and implement an automatic detection system to process efficiently big volumes of multispectral images. This includes developing a web-based front-end to download and manage the data to be processed and conceiving back-end algorithms to

automatically extract information from the data using high performance computing resources.

– Lead and coordinate the dissemination of the project results, including writing submissions to top journals and conferences.

– Write deliverables and technical reports.

– Engage with collaborators, participate in research discussions, and contribute with new ideas.

– Participate in training activities.

Required qualifications

We are looking for excellent and self-motivated candidates with:

– PhD in Computer Science, Mathematics, Physics, Geophysics, Geosciences, Telecommunications, or any other relevant field related to Remote sensing and Deep Learning.

Knowledge and skills

– Experience in applied remote sensing, involving multi/hyperspectral image processing, supervised and unsupervised classifiers and band selection algorithms.

– Experience in high performance cluster computing systems.

– Strong programming skills.

– Track record that shows the ability to work both autonomously and in collaborative environments and projects.

– Excellent writing and communication skills in English.

Merits

– Programming experience with Python and deep learning frameworks (Tensorflow, PyTorch).

– Programming experience in web-based/SAAS Software Development.

– Programming experience in GIS applications.

– Experience in technology transfer, industrial research and/or research projects with both academic and industrial partners.

– Experience in preparation of research proposals for funding agencies and writing technical reports.

- Awards and other distinctions.
- Excellent publication record in relevant top journals (e.g. PAMI, TIP, TMM, TCSVT) and conferences (e.g. CVPR, ICCV, ECCV, ICML, NeurIPS, ICLR).
- Two or more years of postdoctoral full-time research experience.

Important dates

The call will be opened in the forthcoming weeks through [Working at the ICAC/Open calls](#).

About the ICAC and the CVC

The [Catalan Institute of Classical Archaeology (ICAC)](#) is a public research institution created by the Catalan Autonomous Government and the Rovira i Virgili University in 2000. The ICAC aims to research, provide training on and disseminate the protohistoric, classical and late antique cultures of the Mediterranean and beyond.

The successful candidate will be integrated in the [Landscape Archaeology Research Group (GIAP),](#) a leading international group in computational archaeology, remote sensing and the application of machine learning to archaeological problems.

According to the [Human Resources Strategy for Researchers](#) (HRS4R) of the European Commission, ICAC follows the OTM-R principles (the Institute is a centre with the HRS4R accreditation and label since 2015. [Full information here](#)).

The [Computer Vision Center (CVC)](#) is a public non-profit R+D center dedicated to computer vision research and technology. CVC hosts more than 100 researchers (university staff, post-docs, PhD, and Master students), who publish regularly in leading journals and conferences of the field. It has been involved in many projects involving public and industrial partners, including 11 spin-off companies. Thus, CVC provides an excellent environment to carry out applied research and technology transfer projects.