ICAC
Institut Català d'Arqueologia Clàssica

JOB OFFER

to fill a temporary postdoctoral research position on the detection of archaeological sites from multispectral satellite images at the Catalan Institute of Classical Archaeology (ICAC) (code 017.101).

Presentation

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. The project's expected duration is 2 years.

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.

Institut Català d'Arqueologia Clàssica

About ICAC and 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. 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, a leading international group in computational archaeology, remote sensing, and the application of machine learning to archaeological problems.

The Computer Vision Center 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.

0. Contract information

0.1. Position: postdoctoral researcher on the detection of archaeological sites for the Landscape Archaeology Research Group (GIAP) to work on the "Mapping Archaeological Heritage in South Asia (MAHSA)" research project (Code 017.101).

0.2. Job category: postdoctoral researcher (I6).

0.3. Work center: Rovellat square, Tarragona (43003 Spain).

0.4. Working hours: full-time contract (37.5 hours per week from Monday to Friday).

0.5. Remuneration: € 29,201.62 gross per year.

0.6. Duration: expected initial duration of 6 months, extendable according to project requirements. In this case, the contract will comply with the current legal regulations.

0.7. Type of contract: temporary employment due to production circumstances.

0.8. Call: public offer.

0.9. Procedure: ordinary.

0.10. Regulations: ICAC instruction 1/2022, of March 11, and *RDL* 32/2021, of December 28.

1. Participation requirements

Required university degree in computer science, mathematics, physics, geophysics, geosciences, telecommunications, or any other field related to remote sensing and deep learning.

2. Responsibilities

2.1. 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.

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

2.3. Write deliverables and technical reports.

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

2.5. Participate in training activities.

2.6. Review the relevant literature and related works.

3. Merits

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

3.2. Experience in high performance cluster computing systems.

3.3. Strong programming skills.

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

3.5. Excellent writing and communication skills in English.

3.6. Excellent publication record in relevant top journals (e.g., PAMI, TIP, TMM, TCSVT) and conferences (e.g., CVPR, ICCV, ECCV, ICML, NeurIPS, ICLR).

3.7. Full-time postdoctoral research experience.

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

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

3.10. Programming experience in GIS applications.

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

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

3.13. Awards and other distinctions.

4. Application submission

4.1. Interested persons who meet the requirements can submit the application by e-mail to personal@icac.cat of the Catalan Institute of Classical Archaeology. The email will consist of:

4.1.1. Subject: type "ICAC Call 017.101" in the *subject* section of the email.

4.1.2. Body of the message: surnames and first name, NIF or passport number, a contact phone number, the academic degree, in addition to stating the will to participate in this job offer.

4.1.3. Attached documents: a PDF of the title specified in section 1 must be attached. A single PDF file of the curriculum vitae (CV), with the corresponding supporting documents related to the subject of the job offer, should also be attached.

4.2. The deadline for applications is March 27, 2022, at 24 h.

4.3. Applications that do not meet the requirements will not be considered.

5. Selection procedure

5.1. The Evaluation and Selection Committee (hereinafter, CAS) will evaluate the applications and will score on a maximum of 100 points and in accordance with the following criteria:

5.1.1. Academic qualifications: academic qualifications will be assessed when they are suitable for the job, with a score of 0 to 10 points. This assessment will not consider the degree presented to meet the requirements specified in section 1 of the offer.

5.1.2. Work, research, and other training experience: participation in research projects will be valued; work or professional experience related to the subject of the call; the scholarships, grants or contracts obtained related to the object of the call; participation in research activities, and presentations at scientific meetings; with a score of 0 to 60 points.

5.1.3. Other curricular merits such as: participation in dissemination and knowledge-transfer initiatives or other activities related to the purpose of the call; with a score of 0 to 30 points.

5.2. If deemed appropriate, the CAS may request the necessary documentation to verify the alleged merits, at any time during the processing of the application. Failure to provide the required documentation within the requested period may result in suspension of the application.

5.3. In the event of a tie for the highest score, the CAS will interview each of the matched applicants to better determine the merits and assign the order of precedence between them. If the CAS deems it appropriate, it will also be able to interview applicants who have obtained up to a maximum of 10 points difference

with respect to the candidate who has obtained the highest score. In the interview, the CAS will assess more accurately the merits and abilities determined in the call, especially the skills and knowledge related to section 3. The maximum score of the interview will be 15 points, which is they will have to add to the points obtained in the valuation of the rest of merits. If the interview score requires it, the maximum score of 100 points may be exceeded.

5.4. Applications that do not score 60 points on the evaluation cannot be selected or included in the booking list.

5.5. The selection procedure will take place within ten working days of the closing date for the admission of applications. It is scheduled to join the workplace on April 22, 2022.

6. Personal data

6.1. By formalizing and submitting the application, the applicants accept the rules of the call and give their consent for the processing of the necessary personal data to take part in the call, and for the rest of the processing of the selection process or other actions that derive from it, in accordance with current regulations.

6.2. The personal data contained in the application will be processed with the following specifications:

6.2.1. Activity identification: Selection and provision of jobs.

6.2.2. Responsible for data processing: Catalan Institute of Classical Archaeology (ICAC); plaça d'en Rovellat, s/n, 43003 Tarragona, telephone (+34) 977 24 91 33, info@icac.cat, www.icac.cat.

6.2.3. Data protection officer: delegatpd@icac.cat, Catalan Institute of Classical Archeology, Plaça d'en Rovellat, s/n, 43003 Tarragona, telephone (+34) 977 24 91 33.

6.2.4. Purpose of the processing of personal data: selection and provision of jobs through public calls.

6.2.5. Legal basis: consent, mission carried out in the public interest provided for in Royal Legislative Decree 5/2015, of 30 October, approving the revised text of the Law on the Basic Statute of Public Employees.

6.2.6. Recipients: publication on the ICAC website of the procedures for the selection process, in accordance with current regulations; the applicant will be informed that their details will be published on the ICAC website; people who access the information by applying the principle of active advertising provided for in the transparency regulations; the competent public administrations in this field, in compliance with the applicable legal obligation. Personal data will not be transferred outside the European Union.

6.2.7. Rights of interested parties: it will be possible to access the provided personal data, request its rectification or deletion, oppose its treatment and request its limitation, by sending an explicit request to delegatpd@icac.cat

6.2.8. Term for retention of personal data: following the calendar for the retention and disposal of documents of the Administration of the Generalitat de Catalunya.

6.2.9. Complaint: If the applicant's rights regarding the protection of personal data are breached, especially when they have not satisfactorily exercised of their rights, they may file a complaint with the Data Protection Authority through its website: www.apdcat.cat.

7. Follow-up of the call according to the hiring principles in ICAC

7.1. This call is based on compliance with the principles approved by the ICAC in the framework of the OTM-R program for the accreditation of HRS4R. These principles are set out in the document entitled *Principis per contractar el personal de l'ICAC* (Principles for Hiring ICAC Staff), which can be found on the Institution's website.

7.2. In compliance with the principles above, this call will be evaluated in accordance with the procedure set out in the present document.

Tarragona, March 11th, 2022

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