Job offer: postdoctoral Fellow

Project Title: Concept Detection in Images from Cultural Heritage databases

Research Fields: Computer vision, deep learning, low-shot learning, digitalized European cultural heritage, reading history

Work Place: Rennes, campus de Beaulieu

Research Laboratory(ies): IRISA (UMR 6074), 3LAM

UBL Research Department: NUMERIC, ACCP

Head(s) of the Scientific Project: Ewa KIJAK, Brigitte OUVRY-VIAL

Offer type: postdoctoral researcher (short term contract, 12 months, possibly once renewable)

Hiring Institution: Université du Maine – Le Mans

Application deadline: 08/07/2018

Job Starting Date: expected 01/10/2018 (can be postponed until 01/01/2019 if necessary)

Environment

The post-doc will take place at IRISA (Institute for Research in IT and Random Systems) which is a Mixed Research Centre (UMR) associating 8 trustees including University of Rennes 1, CNRS and INRIA. Founded in 1975, it is a joint research center for Informatics, including Robotics and Image and Signal Processing. On these themes, IRISA is positioned as the first research laboratory in Brittany. With 750 people, 40 teams, 7 departments, IRISA forms a research cluster of excellence in the domain of Digital Sciences.

Located in a dynamic city on a human scale, welcoming many students, the laboratory is only two hours away from Paris and one hour from prestigious sites such as Mont Saint-Michel or Saint-Malo.

The candidate will be hosted into the Linkmedia team. Linkmedia is one team of IRISA and brings together researchers from machine learning, computer vision, NLP, and security to investigate a number of key issues related to multimedia collections.

The postdoctoral research will be achieved in close collaboration with members of the 3LAM laboratory working on digital Cultural heritage. The multidisciplinary 3LAM
Mission brings together specialists in literature, civilization, linguistics and media studies from different geo-cultural areas (mostly French, English-, German-, and Spanish-speaking). 3LAM concentrates its research on identities and cultural memories with a strong focus on digital humanities.

**Mission (scientific project)**

**Context and objectives**

The proposed work is related to a European interdisciplinary R&D project (READ-IT) involving ICT scholars and Human and Social Sciences (HSS) scholars. The aim of Human and Social Sciences (HSS) researchers is to exploit rich 'human archives' in multiple media and languages depicting reading experiences, e.g., the practical circumstances of, the facts and effects related to reading. Visual representations of reading, such as photos, paintings, drawings, engravings, or sculptures portraying readers, constitute a particularly valuable source for the history of reading that has been neglected until now, partly because of the lack of automated visual content analysis tools to explore at scale such resources.

The goal of this work is to facilitate access to an enriched dataset of visual sources, in order to study representations of reading from past and present in a computer assisted way, building on a close collaboration between scholars in reading studies and scientists in multimedia and computer vision.

The final goal would be for example to be able to evaluate in a systematic way the qualities of visual sources (e.g., distinguish between stereotypical vs. more realistic visualizations), get new insights into changing attitudes (individual or group reading), study the appearance of new readers over time (women, lower classes, children, ethnic minorities), or analyze changes in mass consumption of genres (bibles, novels, newspapers, comic strips) and reading devices (books, computers ipads, e-readers).

Investigating these key questions requires the development of high-level visual concept recognition tools for establishing comparisons (e.g., search for similar visual representations) and for automatic content analysis (recognition of visual concepts).
Research project

The goal is to analyze images from ‘human archives’:

(i) to identify how many persons are involved, their status, their position, if they are sitting or not, who is reading, what is the environment,

(ii) also to discriminate between reading and non-reading situations, meaning trying to detect if there is an interaction or an engagement between a person and a text

This calls for adaptable technology to detect domain-specific concepts in images, leveraging state-of-the-art deep learning approaches and domain adaptation to cope with the limited amount of available annotated data.

Two key challenges arise: learning from very few examples, a frequent situation in HSS, and constantly learning as new data is being ingested.

To achieve the aforementioned objectives, the work developed during the postdoc will start from transfer learning to gradually fade to few-shot learning and then to incremental learning.

Required Profile

Doctor (PhD) in computer vision or image processing, maximum 3 years of experience after thesis defense\(^1\). An international experience in research is required (during or after Doctorate). Candidates must not have supported their thesis in the hiring institution and not previously worked in the host research unit.

Required skills:

- relevant research skills and experience in computer vision, machine learning / deep neural networks
- good English communication skills (oral and written)

\(^1\) The thesis defense must have taken place after 31/08/2014, except for rare exceptions. Periods of sickness, maternity or parental leave shall not be counted in this 3 years period.
Usefull References

Laboratory (IRISA) : https://www.irisa.fr/
Research team (LINKMEDIA) : https://www-linkmedia.irisa.fr/
Research team (3LAM) : http://3lam.univ-lemans.fr/fr/index.html
READ-IT project : https://readit-project.eu/

Bibliography


How to apply?

Please send the following documents by email to:

Ewa KIJAK (ewa.kijak@irisa.fr) and Brigitte OUVRY-VIAL (brigitte.ouvry-vial@univ-lemans.fr) with copy to UBL (recherche@u-bretagne-loire.fr)

- Short Curriculum Vitae and a covering letter showing your interest and especially addressing your professional project
- A list of your major works (2 pages max.) : scientific publications, patents and others scientific productions
- Letters of recommendation (not mandatory, but appreciated)
- A copy of your PhD diploma

The general selection process is described here :

https://u-bretagne-loire.fr/dossiers/postdoc/candidatures

2 For doctors graduated from a French institution, a link to the thesis notice in the SUDOC Catalogue or the French official portal Theses.fr is sufficient.
A jury will make the selection. The candidate will present his-her research works, formation and professional project during 20 min, including his-her professional project. The members of jury will further process the interview for 15 minutes of questions.

The interviews will be organized between 9 to 13 July.

Further information
Annual Gross Salary : 29 600 € with charges (i.e. about 1900€ net per month)

This postdoctoral Fellowship is cofunded by Université Bretagne-Loire and the READ-IT project.

Université Bretagne-Loire federates 7 universities, 15 “grandes écoles” and 5 research organizations in the West of France (Bretagne and Pays de la Loire). This community of universities and institutions aims to develop the scientific and academic potential of its territory at national and international level.

READ-IT (Reading Europe Advanced Data Investigation Tool) is a European JPI Cultural Heritage project with 4 partners (France, Czech Republic, Netherlands, UK), led by the 3LAM laboratory.