

Postdoc Position | Computer Science

Data mining, Machine learning and Natural Language Processing

Applications are invited for a 12-month-postdoctoral fellowship in Computer Science. The research will be conducted in the DM2L team¹ of the LIRIS lab² (CNRS UMR 5205) at INSA Lyon, Villeurbanne, France. The position is funded by IDEX Lyon IMPULSION.

Project information

Context.....

With the emergence of artificial intelligence, the extraction of geographic information has become a key element in knowledge extraction and information retrieval. It involves multiple fields especially related to digital humanities, such as information processing, knowledge management, automatic data analysis and decision making. It is increasingly attracting the attention of many researchers to go beyond the possibilities offered by traditional geographic information systems to manipulate named places in addition to geographical coordinates. In a context of management and analysis of big data, the existing methods appear too segmented and too specific to the type of documents considered. The generalization of a method for the treatment of heterogeneous data then appears as a major scientific issue.

One of the objectives of this project is to strengthen interdisciplinary collaborations and federate research in engineering (computer science and data science) and Humanities and Social Sciences (geography, history, linguistics, etc.) around digital issues. The challenge is at the same time to solve scientific issues in engineering and to address societal issues around the treatment of geographic information (smart city, heritage enhancement, territory development, etc.).

The post-doctoral candidate will integrate with the DM2L team of the LIRIS lab and their research objectives will be related to several ongoing projects (the *CHOUCAS* ANR project³, the *GéoDisco* MSH Lyon St-Etienne project, and the *Spatial History of the Encyclopédie* project⁴). The candidate will also have the opportunity to participate in multidisciplinary international collaborations (with computer scientists, geographers, historians, and linguists).

Research objectives.....

In this project, we propose to design and develop a hybrid and modular method of extracting geographic and semantic information from heterogeneous textual corpora (eg, historical, legal, literary, tourist documents, user reviews, social media, etc.). In this context there are several research challenges to be addressed. The first objective is the identification and automatic classification of documents in order to apply the most appropriate information extraction methods. Then the main objective concerns the combination and interoperability between symbolic and statistical NLP (Natural Language Processing) methods (symbolic rules, machine learning, and data mining). This combination of approaches should lead to better performance than conventional methods and better adaptability to the type of document. In particular, we want to develop and implement a hybrid method based on formal grammars and supervised learning techniques.

The overall objective of the project is to design a platform (which will be deployed as web services) to combine, enrich and evaluate the latest advances in the field of NLP, semantic modeling and knowledge extraction. The different methods implemented within the platform will be accessible to non-experts.

<https://projet.liris.cnrs.fr/dm2l/>
<https://liris.cnrs.fr/>
<http://choucas.ign.fr/>
<http://kmcdoon.com/enc/>

Practical information

Knowledge, Skills and Experience.....

Ph.D. in Computer Science, Data Science, Artificial Intelligence/Machine Learning, or a related field.
Strong publication record and/or proven ability to deliver high-quality software in a research context.
Good communication skills (oral and written).
French is a plus but not mandatory

Remuneration Terms and Conditions.....

The starting date is flexible, between February and November 2019. The candidate should indicate the preferred starting date in the application letter.
The position is for one year (12 months) with a salary after taxes of 2,100 euros per month (gross monthly salary: 2,600 euros).

Application procedure.....

Enquiries should be directed to Dr Ludovic Moncla (ludovic.moncla_AT_liris.cnrs.fr)
Applications including a CV, a list of publications and an approximately two-page description of research interests should be sent by email to Ludovic Moncla: Applicants should also arrange two recommendation letters (to be sent to the same address).
Applications will be welcome until the position is filled, those submitted before 15/02/2019 will be considered in priority.