Offre n°2023-07026

Post-Doctoral Research Visit F/M Reasoning on heterogeneous data

Le descriptif de l'offre ci-dessous est en Anglais

Type de contrat : CDD

Niveau de diplôme exigé : Thèse ou équivalent

Fonction : Post-Doctorant

A propos du centre ou de la direction fonctionnelle

The Inria Sophia Antipolis - Méditerranée center counts 34 research teams as well as 7 support departments. The center's staff (about 500 people including 320 Inria employees) is made up of scientists of different nationalities (250 foreigners of 50 nationalities), engineers, technicians and administrative staff. 1/3 of the staff are civil servants, the others are contractual agents. The majority of the center's research teams are located in Sophia Antipolis and Nice in the Alpes-Maritimes. Four teams are based in Montpellier and two teams are hosted in Bologna in Italy and Athens. The Center is a founding member of Université Côte d'Azur and partner of the I-site MUSE supported by the University of Montpellier.

Contexte et atouts du poste

This postdoc offer is part of a bilateral project between Inria and the DFKI (German Research Center for Artificial Intelligence), namely R4Agri (Reasoning on Agricultural Data: Integrating metrics and qualitative perspectives, 2022-2025).

Taking numerical agriculture as the targeted application domain, the overall goal of the R4Agri project is to provide a framework for reasoning about knowledge based on heterogeneous data, with a focus on multi-modal and multi-scale sensor data. Main challenges include context-dependent interpretation of sensor data, which involves reasoning about prior knowledge, and query answering techniques that exploit domain knowledge and accommodate the specificities of data sources in a flexible manner.

The postdoctoral researcher will be a member of the BOREAL team, which is a joint team between Inria, the LiRMM (CNRS and University of Montpellier) and INRAE.

Mission confiée

In collaboration with members of the BOREAL team and DFKI partners, the postdoc will contribute to the design and development of the targeted knowledge-based data access system. The architecture of this system is based on three levels: heterogeneous data sources, including sensor data, domain knowledge centered around an ontology, and mappings between the two. The knowledge representation and reasoning language will be based on first-order logic rules extended with computed predicates and default negation. For more detail, see the following demo paper: https://hal-lirmm.ccsd.cnrs.fr/lirmm-04304601v1

The post-doc is expected to work on methodological, theoretical and algorithmic issues, as well as on the implementation of use cases that demonstrate the practical interest of the techniques developed. This second aspect will be carried out in close collaboration with the other project members of the BOREAL team, in particular the engineer and the PhD student who have been recruited. Regular interaction with DFKI partners is also expected.

The following topics are of particular interest in the project:
- combination of materialisation and virtualisation query answering techniques
- combination of qualitative spatio-temporal reasoning with rule-based reasoning
- query rewriting with rules that feature computed predicates and default negation
- design of mappings adapted to multimodal data fusion.

Principales activités

- Research
- Exchange with the partners
- Scientific paper writing
- Programming and experimenting
Compétences

Technical skills and level required:

- excellent level in knowledge representation and reasoning, very good knowledge of data management, familiarity with semantic web languages
- programming languages: java (other languages like C++ or python is a plus)

Languages: a good level in English is required (spoken and written English).

Relational skills: enjoying teamwork, being able to convey scientific results in a clear and synthetic way

Avantages

- Subsidized meals
- Partial reimbursement of public transport costs
- Leave: 7 weeks of annual leave + 10 extra days off due to RTT (statutory reduction in working hours)
  + possibility of exceptional leave (sick children, moving home, etc.)
- Possibility of teleworking (after 6 months of employment) and flexible organization of working hours
- Professional equipment available (videoconferencing, loan of computer equipment, etc.)
- Social, cultural and sports events and activities
- Access to vocational training
- Social security coverage

Rémunération

Gross Salary: 2653 € per month

Informations générales

- Thème/Domaine: Représentation et traitement des données et des connaissances
- Ville: Montpellier
- Centre Inria: Centre Inria d'Université Côte d'Azur
- Date de prise de fonction souhaitée: 2024-03-01
- Durée de contrat: 12 mois
- Date limite pour postuler: 2024-02-29

Contacts

- Équipe Inria: BOREAL
- Recruteur: Mugnier Marie / Marie-Laure.Mugnier@inria.fr

A propos d'Inria

Inria est l'institut national de recherche dédié aux sciences et technologies du numérique. Il emploie 2600 personnes. Ses 215 équipes-projets agiles, en général communes avec des partenaires académiques, impliquent plus de 3900 scientifiques pour relever les défis du numérique, souvent à l'interface d'autres disciplines. L'institut fait appel à de nombreux talents dans plus d'une quarantaine de métiers différents. 900 personnels d'appui à la recherche et à l'innovation contribuent à faire émerger et grandir des projets scientifiques ou entrepreneuriaux qui impactent le monde. Inria travaille avec de nombreuses entreprises et a accompagné la création de plus de 200 start-up. L'institut s'efforce ainsi de répondre aux enjeux de la transformation numérique de la science, de la société et de l'économie.

L'essentiel pour réussir

The candidate will have a PhD relevant to reasoning on data, in the fields of knowledge representation and reasoning, databases or the semantic web, and a solid publication record.

Essential qualities in order to fulfil this assignment are enjoying teamwork and scientific exchanges.

Attention: Les candidatures doivent être déposées en ligne sur le site Inria. Le traitement des candidatures adressées par d'autres canaux n'est pas garanti.

Consignes pour postuler

Applications must be submitted online on the Inria website. Collecting applications by other channels is not guaranteed.
The position is open to:
- Inria internal mobility, remuneration according to statutory conditions
- mobility from other public body, by posting for a period of three years, renewable, remuneration according to statutory conditions
- in short term contract from service fixed-term

Sécurité défense :
Ce poste est susceptible d’être affecté dans une zone à régime restrictif (ZRR), telle que définie dans le décret n°2011-1425 relatif à la protection du potentiel scientifique et technique de la nation (PPST).
L’autorisation d’accès à une zone est délivrée par le chef d’établissement, après avis ministériel favorable, tel que défini dans l’arrêté du 03 juillet 2012, relatif à la PPST. Un avis ministériel défavorable pour un poste affecté dans une ZRR aurait pour conséquence l’annulation du recrutement.

Politique de recrutement :
Dans le cadre de sa politique diversité, tous les postes Inria sont accessibles aux personnes en situation de handicap.