Offer #2019-02099

Post-Doctoral Research Visit F/M Post-doc on SHACL-S: a SHACL extension for schemata validation

Contract type : Fixed-term contract

Level of qualifications required : PhD or equivalent

Fonction : Post-Doctoral Research Visit

About the research centre or Inria department

The Inria Sophia Antipolis - Méditerranée center counts 34 research teams as well as 8 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.

Context

This post-doc position is in the context of a new collaboration between Inria and Stanford and more precisely the laboratory in Stanford providing the most well-known and widely used open-source schema editor called Protégé and the Wimmics team at Inria providing the open-source semantic factory CORESE.

A common interest was identified for "Verifying the quality of ontologies" and combining the skills on supporting
ontology design from Protégé group at Stanford with the skills on semantic Web data processing from the Wimmics team and with a special application case to medical and healthcare data and in particular to their schemata/ontologies.

In the context of this collaboration, the candidate would work in Wimmics (Inria, Sophia Antipolis) but may have to visit the Protégé group at Stanford.

Assignment

As the amount of data published on the Web grows, the need for data schemata to structure and document them also grows. There exist ontology patterns, constraints and best practices to guide the design of these schemata but they are not systematically applied and checked on schemata published on the Web. We propose to explore the extension of the SHACL data validation language to support the validation of schemata.

The candidate will investigate the extension of the structure-oriented SHACL validation to include more semantics, and to support ontology validation and the modularity and reusability of the associated constraints. Where classical Logical (OWL) schema validation focuses on checking the semantic coherence of the ontology, the candidate will explore a language to capture ontology design patterns as extended SHACL shapes organized in modular libraries. The overall objective is to augment the Protégé editor with fundamental querying and reasoning capabilities provided by CORESE, in order to assist ontology developers in performing ontology quality assurance throughout the life-cycle of their ontologies.

The recruited person will be in connection with members of the Wimmics group at Inria and members of the Protégé group at Stanford and will be leading that joint project.

Main activities

We envision the following work plan:

1. analysis of requirements for specification of SHACL extensions along with their semantics;
2. design of SHACL extensions and implementation in open-source code;

3. formalization of reusable patterns and publication of modular libraries;
4. evaluation on real ontologies (e.g. Gene Ontology, BioPortal, LOV);
5. W3C member submission of the validated SHACL extensions.

Skills

Technical skills needed in : RDF/S, OWL, SHACL, ShEX, SPARQL, Java

Languages : English

Relational skills : work in international collaboative projects

Other valued appreciated : Autonomy

Benefits package

- 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

Remuneration

Gross Salary: 2653 € per month

General Information

- **Theme/Domain :** Data and Knowledge Representation and Processing
  Information system (BAP E)
- **Town/city :** Sophia Antipolis
- **Inria Center :** Centre Inria d'Université Côte d'Azur
- **Starting date :** 2020-01-01
- **Duration of contract :** 2 years
- **Deadline to apply :** 2019-12-09

Contacts

- **Inria Team :** WIMMICS
- **Recruiter :**
  Gandon Fabien / fabien.gandon@inria.fr

About Inria

Inria is the French national research institute dedicated to digital science and technology. It employs 2,600 people. Its 200 agile project teams, generally run jointly with academic partners, include more than 3,500 scientists and engineers working to meet the challenges of digital technology, often at the interface with other disciplines. The Institute also employs numerous talents in over forty different professions. 900 research support staff contribute to the preparation and development of scientific and entrepreneurial projects that have a worldwide impact.

The keys to success

We believe this topic corresponds to a two-year post-doc for a PhD student having defended a thesis in the domain of semantic Web and ontology engineering.

The candidates most have a strong background in ontology engineering, semantic Web and an appetence for international collaboration and open-source projects.

Warning : you must enter your e-mail address in order to save your application to Inria. Applications must be submitted online on the Inria website. Processing of applications sent from other channels is not guaranteed.

Instruction to apply

Defence Security :
This position is likely to be situated in a restricted area (ZRR), as defined in Decree No. 2011-1425 relating to the protection of national scientific and technical potential (PPST).Authorisation to enter an area is granted by the director of the unit, following a favourable Ministerial decision, as defined in the decree

of 3 July 2012 relating to the PPST. An unfavourable Ministerial decision in respect of a position situated in a ZRR would result in the cancellation of the appointment.

Recruitment Policy :
As part of its diversity policy, all Inria positions are accessible to people with disabilities.