2018-00742 - Software/mathematical scientist position

**Contract type:** Public service fixed-term contract
**Level of qualifications required:** Graduate degree or equivalent
**Other valued qualifications:** Engineering degree, MsC or PhD in computer science, automatic control or applied mathematics

**Fonction:** Temporary scientific engineer

**About the research centre or Inria department**
Inria, the French National Institute for computer science and applied mathematics, promotes “scientific excellence for technology transfer and society”. Graduates from the world’s top universities, Inria’s 2,700 employees rise to the challenges of digital sciences. With its open, agile model, Inria is able to explore original approaches with its partners in industry and academia and provide an efficient response to the multidisciplinary and application challenges of the digital transformation. Inria is the source of many innovations that add value and create jobs.

Hycomes has been created as a new team of the Rennes – Bretagne Atlantique Inria research center in July 2013. The team builds upon the most promising results of the former S4 team-project and of the Synchronics large scale initiative. Two topics in embedded system design are covered:
- Hybrid systems modelling, with applications to multi-physics embedded systems design;
- Contract-based design and interface theories, with applications to requirements engineering.

**Context**
A software/mathematical scientist position is available in the Hycomes team (Inria Rennes, France) in the context of the IPL ModeliScale initiative. This position is funded by the FUI ModeliScale collaboration with Dassault Systèmes, EDF, Engie, CEA/INES, DPS, Eurobios and PhiMeca. The work will be in close collaboration with the Parkas (ENS/Inria, Paris, France) and Tripop (Inria/LJK, Grenoble, France) teams.

The focus of the FUI ModeliScale collaboration is on the Modelica language and on its use for modeling energy networks (electric grids, urban heat networks, ...). The main challenge addressed by this collaboration is to improve the scalability of Modelica technologies, so that large network models can be analyzed and simulated.

**Assignment**
The scientist is expected to contribute to, integrate and maintain software prototypes for the Modelica mathematical modeling language. These software will implement new structural analysis algorithms for multimode DAE systems and code-generation techniques, for distributed simulation of large Modelica models. The scientist is also expected to help industrial partners to use these software prototypes on proprietary industrial case studies. Work will be in close collaboration with researchers in the Hycomes (Irisa/Inria Rennes), Parkas (ENS/Inria Paris) and Tripop (LJK/Inria Grenoble) teams. The scientist is expected to bring assistance to the coordination of the Inria researchers, PhD students and engineers, from these three teams, who are contributing to the FUI ModeliScale project.

**Main activities**
Main activities will be the software development and integration, testing, documentation. The scientist will be also assist the head of team Hycomes, to coordinate the contributions of three Inria teams (Hycomes, Parkas, Tripop) to the FUI ModeliScale project.

**Skills**
We are seeking candidates with one or several of the following competencies:
- software engineering, software testing,
- programming language and compiler design,
- numerical analysis,
- high performance computing,
- knowledge of the Modelica language,
- software project management,
- experience in the OCaml language.

Excellent written and oral communication skills in English are expected. Knowledge of the French language is not required.

The scientist is expected to have excellent teamwork skills, and some experience in team management would be appreciated.

**Benefits package**
- Subsidised catering service
- Partially-reimbursed public transport
- Social security
- Paid leave
- Flexible working hours
- Sports facilities
Remuneration
Monthly gross salary: from 2562 euros (depend on the experiences and diplom)

General Information
- **Theme/Domain**: Embedded and Real-time Systems
  Software Experimental platforms (BAP E)
- **Town/city**: Rennes
- **Inria Center**: CRI Rennes - Bretagne Atlantique
- **Starting date**: 2019-09-01
- **Duration of contract**: 1 year
- **Deadline to apply**: 2018-06-30

Contacts
- **Inria Team**: HYCOMES
- **Recruiter**: Caillaud Benoit / benoit.caillaud@inria.fr

About Inria
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The keys to success
We are seeking candidates thriving in large collaborations with multiple organizations, multiple teams, distributed across several sites in France. The bulk of the work will be software development, using state-of-the-art software engineering techniques. The scientist will also assist in the coordination of Inria’s contribution to the FUI ModeliScale collaborative project.

Conditions for application
Please submit online: your resume, cover letter and letters of recommendation.

For further information, please contact:
- Benoit Caillaud (benoit.caillaud@inria.fr) or
- Khalil Ghorbal  khalil.ghorbal@inria.fr

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.

**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.