Offre n°2025-09140

Post-Doctoral Research Visit F/M Tradeoff exploration and management for the Edge-Cloud Continuum

Type de contrat : Fixed-term contract

Contrat renouvelable : Oui

Niveau de diplôme exigé : PhD or equivalent

Fonction : Post-Doctoral Research Visit

A propos du centre ou de la direction fonctionnelle

The Inria Centre at Rennes University is one of Inria's nine centres and has more than thirty research teams. The Inria Centre is a major and recognized player in the field of digital sciences. It is at the heart of a rich R&D and innovation ecosystem: highly innovative PMEs, large industrial groups, competitiveness clusters, research and higher education players, laboratories of excellence, technological research institute, etc.

Contexte et atouts du poste

The successful candidate will join a dynamic and international research team (https://stack.inria.fr). As a funded Postdoctoral researcher, you will investigate novel programming models and resource management techniques for the Edge-Cloud Continuum with a particular interest on tradeoff management between cost and quality.

The research of this PostDoc position will be conducted as part of the QUICK project (_Collaborative services for Urgent systems across the Edge-Cloud Computing Continuum_), funded by the "Etoiles Montantes" regional award. Our Postdocs are given the opportunity to work on the SLICES-FR large-scale experimental platform and gain interdisciplinary expertise by participating in national and international (EU funded Horizon Europe) projects.

Mission confiée

Computing is shifting from the traditionally centralized cloud to a distributed set of heterogenous resources located between the edge, the cloud and in-between. As computing as moved to this *Computing Continuum*, the tradeoff between performance, availability and cost has become increasingly complicated.

The Computing Continuum aggregates the architectural and algorithmic challenges of its subcomponents while presenting new challenges related to their control and adaptation. Urgent analytics describes time-critical, data-driven scientific workflows that can leverage distributed data sources in a timely way to facilitate important decision making in case of natural disasters, extreme events and so on. In such context, urgent analytics are in critical need for the untapped potential of the Computing Continuum. The rapidly increasing variety, scales, resolutions, and availability of observational data, such as that provided by sensor networks and scientific observatories, provides the potential for new insights for addressing scientific and societal challenges

Principales activités

This research work is structured around two research axis to enable a new class of applications capable of eacting to edge dynamics and using these insights to drive computation and actuation. First, establishing models of infrastructure availability and efficiency will allow decision-making to consider the flexibilities of applied models. Second, delivering software abstractions that incorporate application context and infrastructure events to program urgent analytics on top of continuum infrastructure.

Main activities (5 maximum) :

- Identify common patterns in data-driven analytics
- Survey adaptions mechanisms and policies for Edge-Cloud infrastructure
- Establish quality/costs tradeoffs for computations at runtime
- Propose interfaces and integration of findings in a collaborative platform
- Validate results on real platforms and publish findings

Additional activities :

- Proposition/supervision of students projects for Master-level students
- Involvement in conference committees and local events
- Possibility of teaching at IMT Atlantique or Nantes University

Application documents:

- Motivation letter (including, but not limited to, basic information such as who you are, your educational background, and motivation for this position. Why does your expertise and vision fit the profile of this open position?)
- Full CV including at least 2 references
- 1-2 relevant scientific articles contributed by the candidate

Application Process and Interview:

- Interviews will typically take place via zoom.
- Applicants are encouraged to apply promptly as the position will be filled upon finding the right candidate.

Compétences

Technical skills:

- PhD in Computer Science or Electrical Engineering
- Fundamentals of Distributed systems and Utility Computing (Cloud, Edge, IoT)
- Experience in scheduling and optimization algorithms
- Practical experience with containers and middlewares
- Track record of publications in Cloud or Systems communities

Languages :

- English is mandatory, French is a plus

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.)

Rémunération

Monthly gross salary amounting to 2788 euros

Informations générales

- **Thème/Domaine :** Distributed Systems and middleware
  System & Networks (BAP E)
- **Ville :** Nantes
- **Centre Inria :** Centre Inria de l'Université de Rennes
- **Date de prise de fonction souhaitée :** 2025-10-01
- **Durée de contrat :** 1 year, 1 month
- **Date limite pour postuler :** 2025-09-10

Contacts

- **Équipe Inria :** STACK
- **Recruteur :**
  Balouek Daniel / Daniel.Balouek@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'e?orce ainsi de répondre aux enjeux de la transformation numérique de la science, de la société et de l'économie.

L'essentiel pour réussir

- You are enthusiastic about developing and investigating innovative research ideas and systems within the discipline of distributed systems
- You have a strong background in distributed systems, Edge or Cloud computing and machine learning techniques
- You stand out from your peers because of strong commitment and independent work
- You are a team player and communicative (excellent oral and written English skills, good ability to write scientific publications)

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

Please submit online : your resume, cover letter and letters of recommendation eventually

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.