



Offre n°2024-07840

Post-Doctoral Research Visit F/M Formal modeling and analysis for automated transportation systems

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 Centre Inria de l'Université de Grenoble groups together almost 600 people in 22 research teams and 8 research support departments.

Staff is present on three campuses in Grenoble, in close collaboration with other research and higher education institutions (Université Grenoble Alpes, CNRS, CEA, INRAE, ...), but also with key economic players in the area.

The Centre Inria de l'Université Grenoble Alpes is active in the fields of high-performance computing, verification and embedded systems, modeling of the environment at multiple levels, and data science and artificial intelligence. The center is a top-level scientific institute with an extensive network of international collaborations in Europe and the rest of the world.

Contexte et atouts du poste

A 16-month postdoctoral position, starting at September 1st, 2024 is available at the Inria research center of Univ. Grenoble Alpes in the [CONVECS](#) team. The candidate will have the opportunity to work in the EU project [A-IQ Ready](#) funded by [Chips JU](#).

The onset of climate change and widespread geopolitical conflicts and social inequalities showcase the need for innovation and change that require a better world. Now technologies like artificial intelligence, the Internet of Things, robotics and other related technologies are making such a world all the more feasible. The A-IQ Ready project aims to introduce and materialise an intelligent autonomous ECS (Electronic Component and System) fit for our digital age and utilise crucial technologies, like edge continuum orchestration for artificial intelligence, distributed collaborative intelligence and quantum sensing, which could prove revolutionary for most services and industries. These technologies and their combination will propel the transition to a Europe of Society 5.0.

The activities of CONVECS focus on the formal modeling and verification of asynchronous concurrent systems, which are instantiated in various domains (communication protocols, distributed algorithms, embedded systems, networks-on-chip, etc.). To this aim, CONVECS proposes new generation formal languages for specifying the behavior and the properties of concurrent systems, and devises efficient verification algorithms and tools running in the [CADP](#) verification toolbox, which assists the various phases of the design process (compilation and rapid prototyping, interactive and guided simulation, model checking and equivalence checking, conformance test generation, co-simulation, performance evaluation) and is widely used in academia and industry.

Mission confiée

Automated vehicles are complex systems involving a large number of hardware and software components that must interact (often asynchronously) and cooperate to assist decision making in a reliable way. Due to this complexity, the design process of these systems must integrate formal methods and analysis techniques, as recommended by current standards, e.g., ISO 26262.

The candidate will undertake, in collaboration with researchers of the CONVECS team and with international partners of the A-IQ Ready project, the formal modeling of automated transportation systems (outdoor truck transportation, indoor logistics) considered as use cases within the project. The candidate will study the behaviour of these systems and propose the applications of various analysis methods (model checking, equivalence checking, conformance test generation, probabilistic verification, etc.) to assess the correctness and reliability of these systems.

The candidate will also interact (by video-conference) with project partners to exchange information on the informal specifications of the systems considered and the formal modeling approaches employed.

Principales activités

The candidate will devise formal models describing the behaviour and the correctness properties of the systems under study, and study their reliability using various analysis techniques.

The candidate will also contribute to the writing of various deliverables scheduled in the A-IQ Ready project.

Compétences

Technical skills and level required : knowledge of specification languages for concurrent asynchronous systems

Languages : proficiency in English; knowledge of French also welcome

Relational skills : team working

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 (90 days / year) and flexible organization of working hours (except for internship)
 - Social, cultural and sports events and activities
 - Access to vocational training
 - Social security coverage under conditions

Rémunération

2788 € gross salary / month

Informations générales

- **Thème/Domaine** : Preuves et vérification
Ingénierie logicielle (BAP E)
- **Ville** : Montbonnot
- **Centre Inria** : [Centre Inria de l'Université Grenoble Alpes](#)
- **Date de prise de fonction souhaitée** : 2024-09-01
- **Durée de contrat** : 1 an, 4 mois
- **Date limite pour postuler** : 2024-07-14

Contacts

- **Équipe Inria** : [CONVECS](#)
- **Recruteur** :
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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 should possess a solid background in the formal modeling and verification of concurrent systems. A taste for software development and experimentation is strongly desired.

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 via the Inria website. Processing of applications submitted via other channels is not guaranteed.

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.