Informations générales

- **Thème/Domaine** : Réseaux et télécommunications
- **Système & réseaux (BAP E)**
- **Ville** : Villeneuve d’Ascq
- **Centre Inria** : CRI Lille - Nord Europe
- **Date de prise de fonction souhaitée** : 2019-11-01
- **Durée de contrat** : 1 an
- **Date limite pour postuler** : 2019-12-01

Contacts

- **Equipe Inria** : FUN
- **Recruteur** : Mitton Nathalie / Nathalie.Mitton@inria.fr

A propos d'Inria

Inria, l'institut national de recherche dédié aux sciences du numérique, promeut l'excellence scientifique et le transfert pour avoir le plus grand impact. Il emploie 2400 personnes. Ses 200 équipes-projets agiles, en général communes avec des partenaires académiques, impliquent plus de 3000 scientifiques pour relever les défis des sciences informatiques et mathématiques, souvent à l'interface d'autres disciplines. Inria travaille avec de nombreuses entreprises et a accompagné la création de plus de 160 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.

Consignes pour postuler

Interested candidates should contact Nathalie Mitton (nathalie.mitton@inria.fr) and Aline Carneiro Viana (aline.viana@inria.fr) by sending: *** their detailed curriculum vitae (including publications and references), a short motivation letter as well as at least one recommendation letter ***.

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 2013, 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.

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.

A propos du centre ou de la direction fonctionnelle

The Inria Lille – Nord Europe Research Centre was founded in 2008 and employs a staff of 360, including 300 scientists working in sixteen research teams. Recognised for its outstanding contribution to the socio-economic development of the Hauts-de-France région, the Inria Lille – Nord Europe Research Centre undertakes research in the field of computer science in collaboration with a range of academic, institutional and industrial partners.

The strategy of the Centre is to develop an internationally renowned centre of excellence with a significant impact on the City of Lille and its surrounding area. It works to achieve this by pursuing a range of ambitious research projects in such fields of computer science as the intelligence of data and adaptive software systems. Building on the synergies between research and industry, Inria is a major contributor to skills and technology transfer in the field of computer science.

Contexte et atouts du poste

The FUN research group investigates solutions to enhance programmability, adaptability and reachability of FUN (Future Ubiquitous Networks) composed of RFID, wireless sensor and robot networks. The objects that compose FUN are characterized by limited resources, high mobility and high security level in spite of untrusted environment. They communicate in a wireless way, to be operational and efficient, such networks have to follow some self-organizing rules. Indeed, components of FUN have to be able in a distributed and energy-efficient way to discover the network, self-deploy, communicate, self-structure in spite of their harsher constraints while adapting the environment in which they evolve.

https://team.inria.fr/fun/

A post-doctoral position is available within the Inria FUN team in collaboration with the TRIBE team. The position is for one year, and is intended for an experienced PhD student. The successful candidate will be based in the Inria Lille Nord Europe premises, France, with frequent visit to the Inria Saclay site close to Paris.

Mission confiée

In Low & Middle Income Countries, and in particular those situated in Sub-Saharan Africa, communication technologies have not yet delivered their potential. The lack of infrastructures is considered as one of the major problems that still prevent economical development [1].

In this context, communication technologies, in particular opportunistic communications, are seen as the catalytic power that will foster the development of these developing countries.

The literature brings interesting insights in the domain of opportunistic forwarding [2,3]. Nevertheless, we argue that the challenged context above-mentioned requires more than handling communication outages but also to adapt to the specific context of individual nodes and to the requirements of the different contents to be forwarded. In particular, content delivery strategies in mobile opportunistic networks do not usually consider particularities of nodes’ spatial and contextual conditions (speed, direction, resources, geographic locations, etc) [2].

--- Research objective –

Specifically, the successful candidate will work on the design and evaluation of a novel context-aware forwarding strategy in wireless opportunistic networks. In particular, the novel protocol should take into consideration in the forwarding decision the environmental dynamics and heterogeneity of devices in terms of mobility features, external unexpected events (weather of traffic conditions, etc) and hardware constraints but also the content requirements.

The research fellow will have the opportunity to work with both synthetic and real-world datasets of mobile traffic, with the goal of evaluating and validating the design of the solution. At last, a real in-situ scenario will be defined for validating the results over a real use case.

References


[2] (Combining Spatial and Social Awareness in D2D Opportunistic Routing, Ivan D. Nunes; Clayson Celes; Igor Nunes; Pedro O. S. Vaz de Melo; Antonio A. F. Loureiro, IEEE Communications Magazine (Volume: 56 , Issue: 1 ), Jan 2018


Principales activités

Main activities :

- Analyse the requirements of context aware forwarding
- Propose a novel forwarding strategy for this context
- Evaluate the solution
- Perform real experiments

Compétences
We are looking for a candidate that owns a PhD in computer science with a relevant publication track who is creative in proposing solutions and capable of critical analysis of results. We demand the student:

1) to have excellent skills in scripting and programming (e.g., Python, C/C++, Java) as well as previous experience with simulation tools;
2) to have a good track of publications (consistent with research experience);
3) to have a strong background in mobile networks and forwarding protocols;
4) to be familiar with solutions related to D2D or DTN;
5) to have a good experience with data analysis techniques and statistical tools;
6) to be fluent in spoken and written English with strong communication and presentation skills;
7) Experience with mobility modeling, resource management for wireless networks are considered 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.)
- Social, cultural and sports events and activities
- Access to vocational training
- Social security coverage

**Rémunération**
Gross monthly salary (before taxes): 2653 €