2018-00409 - [Campagne Post-Doctorant 2018/CRI LILLE] - Communication paradigm based on Terahertz band (M/F)

Type de contrat : CDD de la fonction publique  
Niveau de diplôme exigé : Thèse ou équivalent  
Fonction : Post-Doctorant

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 the socio-economic development of the Nord - Pas-de-Calais Region, 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

Main Objective

The main challenge we wish to tackle on this topic, is the investigation of the specific features of data transmission in this portion of the spectrum and the exploitation of these characteristics to achieve very high data rate transmissions by ensuring then coexistence and interoperability with the existing communication technologies (e.g. WiFi).

Mission confiée

Missions :

The recruited person will join the FUN Team at Inria Lille. The mission of the group is to work on Future Ubiquitous Networks. A way to pursue the ubiquitousness of systems, is to be able to exploit different portions of the frequency spectrum in order to improve the connectivity and rate of the networked system. Among the most important requirements for the Future Beyond the Fifth Generation (B5G) mobile networks offer very high throughput per device, the capability to handle a huge amount of data with a low delay, in a heterogeneous context (i.e. connected heterogeneous devices) with different resource capabilities, equipped or not with mobility [1], [2], [3]. This topic is traversal and pertinent to several projects, both national and international that are being developed at FUN Team. Moreover, this is a very hot topic, which is attracting attention from the scientific community, industry, etc.

Job offer description

Since “traditional” MAC and routing approaches suitable for lower frequencies cannot be directly reused in the THz context, the research will mostly focus on the design of new Data Link Layer implementations. In particular, it has been shown that the THz waves are strongly sensitive to the distance changes, which requires highly adaptive MAC protocols in order to achieve high data rate. Furthermore, opportunistic error correction techniques could be applied by taking into account the
specific transmission environment. The solutions developed will be implemented through network simulation tools and possible proof-of-concept based on real test bed will be developed.


**Principales activités**

**Main Activities:**

1) Deeply review of the state of art concerning TeraHertz communication techniques;

2) Identification of the main features of TeraHertz waves and exploitation of these characteristics in a communication context;

3) Design of new adaptive Data Link Layer protocols;

4) Interoperability with other communication technologies (e.g. WiFi, Bluetooth, VLC)

**Compétences**

**Technical skills and required level :**

The ideal candidate should hold a recently obtained PhD in computer science or more generally a field closely related to the subject of this post-doc (wireless networking, MAC). During his/her PhD, the candidate has published original research in top conferences or journals in the field of Signal Processing, Terahertz Band and MAC layer for wireless networks.

Ideally the candidate should have a good level of programming experience with Electromagnetic Tools, C/C++, Matlab. A strong theoric background in mathematics and physic is required.

**Languages :** English

**Social Skills:**

- Sense of organization, autonomy, rigor
- Listening and communicating with non-technical contacts
- Teamwork taste

**Additional skills appreciated:**

- Multidisciplinary approach

**Avantages sociaux**

**Benefits**

- Subsidised catering service
- Partially-reimbursed public transport
- Social security
- Paid leave
- Sports facilities
- Flexible working hours

More information about Lille :

http://www.lille3000.eu/portail/
http://www.lillemetropole.fr/mel.html
Rémunération

Remunerating

The gross monthly salary is 2653€

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** : 01/11/2018
- **Durée de contrat** : 1 an, 4 mois
- **Date limite pour postuler** : 29/03/2018

Contacts

- **Equipe Inria** : FUN
- **Recruteur** :
  Loscri Valeria / valeria.loscri@inria.fr

Conditions pour postuler

Instructions to apply:

Candidates will be treated firstly with a complete file : CV + letter of motivation + list of publications + 2 representative publications + one or more letters of recommendation + prospects for professional integration after the post-doc.

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.

**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.