PhD and Postdoctoral positions in multi-service wireless networks MUSE-WINET

The Institute for Information and Communications Technology, Electronics and Applied Mathematics (ICTEAM) of the University of Louvain, Louvain-la-Neuve, Belgium, invites applications for **positions at doctoral level and postdoctoral level**, in the framework of a Belgian national project (MUSE-WINET) funded by the Belgian NSF (FRS-FNRS) under the Excellence of Science (EoS) program (http://www.eosprogramme.be/).

The project is managed by the COSY Research Group, which is carrying out research in wireless and wired communications, localization and radar systems.

The successful candidates will join a strong research team lead by L. Vandendorpe and carry out research towards a PhD degree or at postdoctoral level. They will have the freedom to choose a topic compatible with the project definition.

The topic is **MUSE-WINET: MUlti-SErvice Wireless NETworks**.

Capitalizing on the paradigms of wireless network virtualization and slicing, and of densification promoted all across the wireless ecosystem, the MUSE-WINET project intends to investigate multi-service wireless networks (MUSE-WINETs) based on a common and shared infrastructure made of Cloud/Fog servers and radio heads equipped with large antenna arrays. The targeted wireless services significantly extend the concept of data transfer slicing, towards power transfer, positioning and wireless access to shared computational resources for cooperative sensing and IoT applications.

To enable the optimization of the performance jointly achievable for all radio and computational services, the project will investigate a cross (X)-service design paradigm. X-service design combines initial slicing of the resources for the different services, a cooperative management of the resources across services in view of their coupling, and inter-service message passing to exploit possible synergies between services.
The project intends to understand the performance trade-offs achievable with MUSE-WINETs and the synergies and inter-service fertilization originating from the X-service design, and to design optimized algorithms for the transceivers, the resource management, and the computational load distribution, as well as to develop appropriate multi-service channel models. This requires the setting up of proper stochastic analytical frameworks. The research questions will be instantiated to use cases and the answers illustrated and corroborated by prototype elements.

The duties of successful candidates are: (i) to carry out research in the area of the project; (ii) to disseminate the research results by means of publications both in journals and international conferences, and seminar presentations; (iii) to contribute to the group life and networking activities.

More information can be obtained from L. Vandendorpe (luc.vandendorpe@uclouvain.be).

Candidates should hold an MSc or PhD degree in electrical engineering, applied mathematics or related disciplines. Candidates should have experience or background in one or preferably several of the following areas:
- signal processing for wireless communications
- wireless power transfer
- mobile edge computing
- resource management

as well as with the following theoretical frameworks:
- optimization theory and methods
- game theory
- statistical signal processing.

Moreover, they should have excellent programming skills.

Good written/oral communication skills in English, and ability to work in a collaborative team, are mandatory.

The positions are available immediately, for a period of 1 year extendable (to 4 years for PhD candidates).

Both the ICTEAM institute and the COSY Research Group are exciting environments. The city of Louvain-la-Neuve, unique in Belgium, and truly international, offers very high quality working and living conditions. Budget is available to fund the publication costs associated with journal papers submitted by the PhD candidate and accepted, and to attend all conferences where papers submitted by the PhD candidate have been accepted.

Applications should include:

- full CV, list of publications
- name of three referees
- transcripts of all modules and results from university-level courses
- motivation letter (maximum one page).

and be sent to L. Vandendorpe (luc.vandendorpe@uclouvain.be).

Applications can be sent at any time. The positions remain open until they are filled.