Senior Researcher – Innovative mobile and wireless network architectures and protocols with a strong focus on 5G networks and Internet of Things (IoT)

Job offer

Short job description

We are looking for an enthusiastic researcher performing and leading research in close collaboration with industry on innovative mobile and wireless network architectures and protocols with a strong focus on current standard wireless network technologies, 5th Generation (5G) mobile networks and Internet of Things (IoT) solutions.

Detailed description

The challenge of the revolutionary 5th Generation of mobile networks (5G) paradigm shift is to lead to a new type of mobile network that addresses the demands and business context of 2020 and beyond. In 5G there will be a need to meet performance requirements that are set multiple times higher than in previous generation networks, the so called 1000x challenge. To address these challenges, innovative research and development should be performed in different technology areas, ranging from massive MIMO, M2M, flexible spectrum usages, Device-to-Device communication, access/backhaul integration, etc.

In the vision of the Internet of Things, future wireless networks will exist of densely deployed heterogeneous devices competing for the same (limited) wireless resources offered by heterogeneous network technologies. One of the key challenges is the local connectivity between wireless devices within a room, home, building, car, manufacturing plant or hospital, because hundreds of heterogeneous devices may be connected wirelessly within an area of only a few cubic meters. Many of these wireless devices are tiny sensor or actuator nodes, and are hence constrained in terms of energy resources, processing and memory capacity. Other devices like smartphones, laptops, and high-end appliances, may have more capabilities. Every device may further run multiple applications with very diverging traffic demands (e.g. in terms of throughput, latency, reliability, energy consumption, synchronization, exposure, etc.).

IBCN, more specifically the Mobile and Wireless Networking (MWN) research group, has gained a lot of expertise during the last years on innovative wireless network architectures and protocols. The research being performed mainly concentrates on using different types of technologies (like IEEE802.11, IEEE802.15.4, Bluetooth, LTE, UMTS, and satellite) in order to create ultra-reliable and high performing wireless networks in multiple contexts and for different scenarios. The main goal is to assess innovative end-to-end wireless solution and systems in different vertical markets (manufacturing, smart cities, home, office, healthcare, transportation, logistics, environmental monitoring...) using both existing and future wireless networking technologies.

Department of Information Technology – Research group IBCN
Gaston Crommenlaan 8/201, B - 9050 Gent, Belgium
www.intec.UGent.be

Function description

You have a solid research background in the field of network technology in general, and in mobile and wireless networks in particular. You have hands-on experience with implementing wireless network concepts and by evaluating through (large-scale) experimental validation and/or through detailed simulations. You have a good knowledge on wireless technology standards and protocols (LTE, UMTS, satellite, IEEE 802.11, IEEE802.15.4, Bluetooth, etc.). Experience with 5G and IoT concepts is recommended.

You are responsible for managing and executing short-term demand-driven projects on mobile and wireless networking solutions in close collaboration with industry. You will also contribute to the transfer of novel technologies to industry.

Given the need to extend the research activities of this research group, a proven track record in research project management and collaboration is an advantage.

Profile

We are looking for candidates with the following qualifications and skills:

- You have a Master's degree in Computer Science, Informatics, ICT or Electronics. You are acquainted with the low level programming languages (C, C++, Contiki).
- You have experience with research activities in national and/or European/Worldwide research projects in an industrial environment or in close collaboration with industry.
- You have at least 3 years of experience in wireless networking, in particular with analysis and performance evaluation of network protocols (theoretical analysis, simulations and experimental validation).
- You are interested to conduct and lead research in an academic environment in the context of short-term demand-driven research projects, coordinated by IBCN
- You are able to plan and carry out your tasks in an independent way.
- You have strong analytical skills to interpret the obtained research results.
- You are a responsible, communicative and flexible person.
- You are a team player.
- You respect the predetermined milestones in research projects.
- Your English is fluent, both speaking and writing.

Information about iMinds – Ghent University research environment

iMinds is an interdisciplinary research institute for ICT innovation in Flanders, founded in 2004 (www.iminds.be) and one of the key innovative players in Belgium. The research is aimed at valorization and is performed in close cooperation with industrial players: big companies like Alcatel-Lucent, Belgacom, Deutsche Telekom, Nokia-Siemens Networks, Philips, Thales, Volvo, Picanol, Telenet; small and medium sized enterprises like a.o. Androme, BeMobile, Comsof, DigiPolis, OneAccess, Televic, ZapFi, Multicap, GreenPeak; as well as non-profit organizations.

The research Group IBCN (Internet-based Broadband Communication Networks and Services www.ibcn.intec.ugent.be) is one of the research groups at the Internet Technologies Department (ITD) at iMinds. It also belongs to the faculty of Engineering and Architecture at Ghent University. The IBCN group is

performing fundamental and applied research on internet-based communication networks and services, more specifically with the focus on: (1) Network Modeling, Design and Evaluation, (2) Mobile & Wireless Networking, (3) High Performance Multimedia Processing, (4) Autonomic Computing & Networking, (5) Service Engineering, (6) Content Management and Search, (7) Data Analysis and Machine Learning, (8) Information Extraction and Retrieval, (9) Electromagnetics, and (10) Physical Layer Design. A well-established experimental test environment and a number of technology platforms support these activities. One of the key domains is the design of future Internet solutions in order to accommodate the future requirements in terms of growing bandwidth, delay, quality-of-service, security, new service models, etc.

The research unit of 'Mobile & Wireless Networking (MWN)' consists of 30 motivated researchers performing research on the following topics: Sensor Networks, Cooperative and Cognitive Networks, Wireless Access, Self-Organizing Distributed Networks (Internet of Things) and Experimentally supported research.

Working as a researcher within this technical environment in the IBCN group can be a truly enriching experience. You will gain a lot of expertise within different application domains like health and care, transport and logistics, media, energy, smart cities, etc.

Contact

If you are interested in this job opening and your profile corresponds to the requirements listed above, please send your motivation letter and CV to martine.buysse@intec.ugent.be, indicating "Application Senior Researcher Innovative mobile and wireless network architectures and protocols" in the subject.

If you need more specific information on the job opportunity, please contact Ingrid Moerman (ingrid.moerman@intec.ugent.be).

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