Open position for PhD researcher:

Techno-economic evaluation of 5G and drone-based solutions

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Context

imec

imec is a world-leading research and innovation hub in nanoelectronics and digital technologies. The combination of our widely acclaimed leadership in microchip technology and profound software and ICT expertise is what makes us unique. By leveraging our world-class infrastructure and local and global ecosystem of partners across a multitude of industries, we create groundbreaking innovation in application domains such as healthcare, smart cities and mobility, logistics and manufacturing, and energy.

As a trusted partner for companies, start-ups and universities we bring together close to 4000 brilliant minds from over 97 nationalities. Imec is headquartered in Leuven, Belgium and also has distributed R&D groups at a number of Flemish universities, in the Netherlands, Taiwan, USA, China, and offices in India and Japan. All of these particular traits make imec to be a top-class employer.

IDLab research group @ Ghent University/ imec

The Internet Technology & Data Science Lab (IDLab) is an imec research group at Ghent University and the University of Antwerp. IDLab focuses its research on internet technologies and data science. Bringing together more than 300 internet and data experts, we develop technologies outperforming current solutions for communication subsystems, high speed and low power networking, distributed computing and multimedia processing, machine learning, artificial intelligence and web semantics. IDLab has a unique research infrastructure used in numerous national and international collaborations.

IDLab collaborates with many universities and research centers worldwide and jointly develops advanced technologies with industry (R&D centers from international companies, Flanders' top innovating large companies and SMEs, as well as numerous ambitious start-ups).

The IDLab techno-economics team where this vacancy is offered http://technoeconomics.idlab.ugent.be/ consists of engineers and economists who are supporting decision makers by translating technological innovation into business opportunities and challenges in different application domains like smart cities, smart mobility and smart energy. The group aims at providing research insights that help companies and policy makers in their decision making. Our research aims to put forward methodology-backed insights that combine technical solutions with their expected economic impact like costs, benefits and related business models.

Techno-economic evaluation of 5G and drone-based services

With lives at stake, speed and visibility are critical for emergency services to reply properly to the incoming distress calls. The emergency services still too often do not have specific information to estimate calamities. Images that show the magnitude of disasters and the number of people involved are therefore invaluable in saving lives. With Drone-as-a-Service solution, rescuers have real-time insight into emergencies using HD and thermal video images. In addition to providing real-time insights for emergency services, the use of drones can also help to reduce response times and improve the overall efficiency of emergency operations. For example, drones can quickly assess the extent of damage to buildings and infrastructure, identify hazards or obstructions that may impede rescue efforts, and locate individuals in need of assistance.
Moreover, the use of drones can reduce the risk to first responders and emergency personnel who might otherwise have to enter dangerous or unstable areas to gather information. Drones can also help to identify potential hazards or dangers that may not be visible from ground-level, such as gas leaks or downed power lines.
With the deployment of 5G networks, the reach of drones can be greatly expanded, enabling emergency services to respond to disasters and emergencies across large geographical areas, and even in remote or hard-to-reach locations. In this way, Drone-as-a-Service solutions have the potential to revolutionize emergency response and save countless lives in the process.
However, in addition to the technical challenges of deploying drones, it is also essential to undertake a thorough techno-economic analysis to fully evaluate their viability and ensure that they can be implemented in a sustainable and responsible way. This analysis involves assessing the costs and benefits of implementing the technology and evaluating its potential impact on emergency response operations and potential cost savings.

In order to face the different research challenges in this interdisciplinary domain, we are looking for a researcher who is able to combine technical and economic insights and has a strong interest in the mobile network domain. The researcher will work within the research project SENSE as well as other national as well as international cooperation in the same domain.

Job description

The job

- Under the supervision of a professor and a postdoc researcher in the team, you will prepare a PhD dissertation over a duration of about 4 years.
- You perform cutting-edge research in the domain of techno-economic evaluation of 5G-based drone solutions.
- You publish and present results both at international conferences and in scientific journals.
- You validate your research by considering concrete use cases and discussing with public and private actors in the field.
- You tightly collaborate with IDLab colleagues within the techno-economic team, as well as in other teams where appropriate.

- You will be involved in different research projects related to your PhD topic, in the framework of national and European funded research cooperations, and collaborate with research partners from industry.
- You will assist the research group with limited educational tasks.

Job requirements

- Holder of a Master degree in Computer Science, Computer Science Engineering, Electrical Engineering or IEOR.
- Strong interest in economic evaluation of technological projects.
- Strong analytical skills for designing and implementing abstract models.
- Experience with object-oriented programming and scripting languages is a plus.
- You work independently, have a strong feeling of responsibility and are able to commit to timing and milestones set forward by different research projects.
- You are a team player and have strong communication skills.
- A good knowledge of English (oral and written) is a must. Any knowledge of Dutch (oral) is a plus.

Our offer

We offer a challenging, stimulating, young and pleasant research environment where you can contribute to solving real-life problems for technological innovations with a clear societal as well as economic value. The work is done in close collaboration with ICT industry players in Flanders and Europe. The UGent doctoral school program offers possibilities for following a range of courses or trainings of your interest. We foresee a competitive remuneration and the possibility to obtain a PhD degree in Engineering. The contract takes the form of a PhD grant for 4 years, with an evaluation after the first year (1+3 contract).

How to apply?

This PhD position is available immediately (starting date not later than Oct 1st 2023) and is open until the vacancy is filled. The position is not open for post-docs.

Apply asap by sending an email to prof. Sofie Verbrugge. Your application should include

- your resume (curriculum vitae)
- motivation letter (indicating both your technical and economic background/interest as well as any specific research skills)
- a copy of your diploma and diploma supplement (with overview of all courses followed)

More information

Sofie Verbrugge – sofie.verbrugge@ugent.be