Marie Skłodowska-Curie PhD Student Position – Researcher in Immersive Video Applications over 5G Networks

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<td>Location</td>
<td>Nokia Bell Labs. María Tubau 9, 28050, Madrid, Spain</td>
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<td>Contact</td>
<td>Álvaro Villegas – <a href="mailto:alvaro.villegas@nokia-bell-labs.com">alvaro.villegas@nokia-bell-labs.com</a></td>
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Nokia Bell Labs Spain is participating in the European project TeamUp5G (New RAN TEChniques for 5G UltrA-dense Mobile networks), an H2020 funded project part of the prestigious Marie Skłodowska-Curie action, Innovative Training Network (ITN) type. This 36-month project is creating an international team of Early Stage Researchers (ESR) who will start their professional research career by jointly optimizing 5G ultra-dense mobile networks and leveraging them to enable a broad range of new, high demanding applications.

**PhD research topic**

We are looking for a researcher who is willing to develop a full PhD in an industrial environment within this project, focused on the application level of the mobile communication path, with the specific challenge of running real time immersive video applications (360 video, Virtual Reality, Augmented Reality) on top of the dense mobile network. The work will address one or several steps of a multimedia communication process within this scenario:

- real time multi-camera video capture,
- design and implementation of machine learning algorithms applied to video (e.g: picture classification/segmentation) to run on multiaccess edge computing systems,
- optimization of compression and transmission of video in low-latency networks,
- blending and rendering of mixed-reality environments,
- analysis and modeling of multimedia Quality of Experience and its relationship with network KPI.

**General Requirements**

- A university degree on advanced level within computer science, computer engineering, electrical engineering or another area that is relevant for the research subject.
- Good knowledge of digital video technology, preferably in the specific area of immersive media (360 video, VR or AR). A good technical base of communication protocols is also desirable.
- It is expected that the research work will include a strong component of Machine Learning techniques, so any experience and/or interest in this area will be positively valued.

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- Other relevant technology areas which are considered positive for this position are: mobile network architecture, distributed media processing, edge computing and virtualization (cloud computing).
- The candidate should meet the general admission requirements for education on doctoral level. The researcher is expected to start the PhD program immediately after the hiring.
- Excellent oral and written English skills (Spanish is optional).

Requirements from Marie Skłodowska-Curie Innovative Training Networks:

- **Mobility**: at the time of appointment, applicants **may not have resided** or carried out their main activity (work, studies) in Spain **for more than 12 months in the 3 years immediately before their recruitment**.
- Early-Stage Researchers (ESRs) must, at the date of recruitment by the beneficiary, be in the first four years (full-time equivalent research experience) of their research careers and have not been awarded a doctoral degree.

**Benefits**
The selected candidate will receive a **36-month, full-time** employment contract as per Marie Skłodowska-Curie Actions (MSCA) regulations for Early Stage Researchers. Yearly gross salary will be in the range of **€31,000 - €34,000**, plus an additional family allowance if applicable. The exact salary will be confirmed upon offer.

**How to apply**
Send the following information to alvaro.villegas@nokia-bell-labs.com.

- **Application Form**¹. Apply for position ESR15.
- Transcripts and certifications from University: Bachelor and Master degrees, including class ranking if possible.
- Supporting letters from two referees.
- Cover letter (one page max): brief description of why you wish to become a PhD student within TeamUp5G.

**Application Deadline:** 31/03/2019


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About TeamUp5G Project
Project website: http://teamup5g.webs.tsc.uc3m.es/

Participation in the TeamUp5G project allows the PhD candidate to be exposed to and to interact with, early on, an entire network of Universities and companies that collaborate on the inter-disciplinary topics of the project. We want to place creative young researchers in front of the real world, enabling them to work on real-life technical issues. Participants will work across multiple European countries and organizations, present at workshops in front of industrial users/stakeholders, and become involved in standardization activities and secondments at academic as well as industrial partners.

TeamUp5G offers:
- To guide and support ESRs through excellent supervision and with the support of a Personalized Career Development Plan.
- To provide to ESRs first-hand industry experience by offering training opportunities in relevant industry organizations through secondments.
- To provide the ESRs with excellent technical training and with training to develop transferrable skills such as entrepreneurship, project management, team work and knowledge transfer skills.

About Nokia Bell Labs
The selected candidate will join the Bell Labs team of Nokia Spain in Madrid, whose research focus is the application of immersive media to human communications. Nokia Bell Labs is a global research community which has been changing the world of information technology for more than a century through the release of breakthrough inventions such as modern information theory, the transistor, the laser and the UNIX operating system. This work has been awarded by nine Nobel Prizes.

Nokia is a global leader in creating the technologies at the heart of our connected world. Powered by the research and innovation of Nokia Bell Labs, we serve communications service providers, governments, large enterprises and consumers, with the industry’s most complete, end-to-end portfolio of products, services and licensing.

From the enabling infrastructure for 5G and the Internet of Things, to emerging applications in virtual reality and digital health, we are shaping the future of technology to transform the human experience. www.nokia.com