

Post-doc and PhD/Research Engineer positions in 5G/6G for Industry 4.0

Job description

The UWICORE laboratory at the Universidad Miguel Hernández de Elche (Spain) offers several post-doc and PhD/Research Engineer positions for research on 5G and 6G networks for Industry 4.0. The research will be conducted within the framework of **two Horizon Europe** (Re4dy - European “Data as a Product” Value Ecosystems for Resilient Factory 4.0 Product and Production Continuity and Sustainability, <https://re4dy.eu/> and Zero-SWARM - Zero-enabling smart networked control framework for agile cyber physical production systems of systems, <https://zero-swarm.eu/>) and one national research project (DiGiT - Cognitive 5G/AI-powered Digital Twins for Automated Mobility and Manufacturing). The objective of the research is to seamlessly integrate 5G/6G networks as part of future digital factories to facilitate a data continuum between the physical and digital domains. To this aim, the work will focus on three main topics: 1) creating 5G/6G digital twins and develop solutions for the joint planning and commissioning of 5G and manufacturing digital twins, 2) integration of 5G/6G networks with industrial networks for seamless data continuum within the manufacturing plan, 3) AI-driven management mechanisms for proactively adapting 5G/6G networks to the service demands and industrial status. Researchers will work together with some of our international and national partners, and while most of the research will be SW-based, some activities will include implementation and testing on testbeds and experimental facilities. The specific research contributions to be conducted are:

- Mechanisms to integrate and coordinate local industrial networks (including TSN type of networks) and 5G Non-Public Network (NPN) to guarantee end-to-end requirements of industrial services.
- Develop AI-based management mechanisms to proactively adapt the 5G NPN configuration and operation based on the industrial service demands. This may include the design of network slices, QoS flows and profiles, radio configuration and computing resources.
- Solutions to proactively manage and adapt local industrial networks with programmable and data-driven control planes to the service demands and the status of local industrial controllers.
- Implementation of passive and active 5G Asset Administration Shell (AAS) following recommendations and specifications of 5G-ACIA (5G Alliance for Connected Industries and Automation), and design and implementation of 5G digital twins.
- Integration of 5G digital twins with digital twins of manufacturing plants, and design of solutions for the joint planning and commissioning of smart connected and digitalized manufacturing plants and their embedded 5G networks.

Candidates profile

Post-doc candidates should have a PhD in Telecommunications, Electrical, or Computer Engineering (or closely related disciplines), and a proven track record of publications in relevant journals and conferences. Preferably, the candidate should have done the PhD or have experience in one of the following research topics: 5G and beyond networks, RAN resource management, industrial wireless networks, AI applied to cellular network management. The candidate should have good programming and simulation skills. Prototyping and experimentation experience will be positively considered (but not required). Good written and spoken communication skills in English are required, as well as team working skills, self-motivation, and a strong desire to utilize technology for improving society. The candidate should have availability to travel to attend project meetings and conferences.

PhD/Research engineer candidates should have a Master in Telecommunications, Electrical, or Computer Engineering (or closely related disciplines). Interest or experience in one of the following topics is required: 5G mobile networks, industrial communications, IoT, use of AI to optimize network management. The candidate should have good programming skills. Publications in journals and conferences are valuable, but not required. Prototyping and experimentation experience will be positively considered (but not required). Good written and spoken communication skills in English are required, as well as team working skills, self-motivation and a strong desire to utilize technology for improving society. The candidate should have

availability to travel to attend project meetings and conferences. The candidate should indicate whether she/he is interested in doing a PhD (not a requirement).

Conditions

- Competitive annual salary based on knowledge, qualifications and/or years of work experience of the candidate. No previous work experience is necessary to apply for the position for the PhD/research engineer positions, we like training young researchers.
- Full time dedication with flexible working conditions.
- Access to sports and facilities and other benefits at UMH as university staff.
- Application deadline: continuous evaluation until the position is filled.
- Contract duration: 24 months for postdoc positions and up to 36 months for PhD/research engineers.
- Starting date: ASAP from February 2023.
- Non EU-candidates should have preferably an EU working permit.

Location/Who we are/About the Uwicore lab

The UWICORE (Ubiquitous Wireless Communications Research) laboratory is part of the Communications Engineering Department of the Universidad Miguel Hernández de Elche (Spain). The laboratory has strong expertise and research record on the design of wireless technologies to verticals, in particular in the areas of Industry 4.0 (or digital transformation of industries) as well as connected and automated vehicles. The lab actively participates in European research programs and closely works with national and international companies and research institutions. The laboratory also actively participates in standardization groups (e.g., ETSI) to transfer its research output. The candidates will join a very dynamic research lab with international collaborations and possibilities to develop their research profile and promote their career.

Application

Interested candidates should send their application by email. Candidates should send their Curriculum Vitae and their Academic Certificate and transcript of records to Prof. Javier Gozalvez (j.gozalvez@umh.es), Dr. Miguel Sepulcre (msepulcre@umh.es) and Dra. M.Carmen Lucas (m.lucas@umh.es). The subject of the email should be "Positions in 5G for Industry 4.0 - Candidate name". Applications will be continuously evaluated upon reception, and online interviews will be organized with the selected candidates until the positions are filled.