PhD on the topic: CMOS-integrated QRNG for IoT SoC designs

The REACT MSCA DN Project

Self-awareness in humans is an innate capability, arising from the brain's ability to process a multitude of sensory inputs. Emulating this functionality in electronic systems—commonly referred to as neuromorphic computing—holds the potential to create highly intelligent machines capable of supporting a wide range of everyday applications, from autonomous vehicles to smart navigation systems. However, realizing neuromorphic computing in practice presents significant challenges, particularly in the areas of energy efficiency, reliability, and security. The REACT MSCA Doctoral Network addresses these challenges by developing a neuromorphic platform that is inherently self-aware in terms of energy consumption, secure operation, and system reliability. As part of this initiative, 15 Doctoral Candidates will be trained through a comprehensive, interdisciplinary program spanning material science, device physics, computer architecture, hardware prototyping, compiler design, simulation and emulation tools, as well as cybersecurity, reliability, and system verifiability.

REACT offers a uniquely structured training environment, combining academic excellence with industrial collaboration. ESRs will benefit from close mentorship by leading researchers and industry experts, while also developing essential skills in scientific writing, research ethics, time management, and entrepreneurship.

By the conclusion of the REACT project, participants will be well-equipped to pursue impactful careers across academia and industry, with the REACT program serving as a strong foundation for their future success.

Organization

Founded in 2021, iQrypto is a deep-tech startup based in Mons, Belgium, and a spin-off of the University of Mons (UMONS). Specializing in quantum random number generation (QRNG), advanced device electronics, analog and digital design, and data acquisition (DAQ) systems, iQrypto is at the forefront of secure hardware technologies for quantum and post-quantum computing applications. The team operates with high agility and interdisciplinary expertise, enabling rapid innovation in both research and product development.

Within the R&D division, a 3-year interdisciplinary PhD position is available at the iQrypto headquarters co-located at UMONS. The successful candidate will join Dr. Alessandro Brunetti's group and will also be supervised by prof. Carlos Valderrama and prof. Fortunato Dualibe (UMONS). They will work on novel hardware security design approaches tailored for quantum-secure systems. The position is funded by the MSCA Doctoral Networks programme for the initial 36 months. The candidate will also undertake one or more secondments at partner institutions during the first three years of the project.

Qualification & Eligibility

- **Mobility Rule: Candidates must not have resided or carried out their main activity in "host country" for more than 12 months in the 3 years immediately before the recruitment date.**
- **PhD Rule: Applicants must not already possess a doctoral degree at the date of recruitment.**
- **Master degree or equivalent in Electrical Engineering, Computer Science, or related field with excellent grades.**
- **Sound knowledge of computer hardware design and synthesis tools (EDA Tools).**
- **Excellent programming and scripting skills.**
- **Excellent English communication, presentation, and writing skills.**
- **Must be a team player.**
- **Knowledge of FPGA architectures is an advantage.**
- **Knowledge of PCB design techniques is an added advantage.**

Conditions of employment

- **A salary of € 2500 gross per month in the first year, increased yearly based on inflation and seniority and based on a full-time position.**
- **Extra holiday pay and end of year allowance**
- **Meal voucher of facial value of 8 euros per worked day**
- **A temporary position of one year with the option of renewal for another two years; prolongation of the contract is contingent on sufficient progress in the first year to indicate that you will successfully complete your PhD thesis within the next three years. A PhD training programme is part of the agreement.**
- **Intended start date: January 15th, 2026**

Application

- **Please submit the following material, concatenated in a single PDF file and upload this file as your 'CV' by means of the application form at Vacancies – project-react.eu.**
- **A cover letter motivating your application and detailing the motivation to apply for this specific PhD project (1 page max).**
- **An academic CV.**
- **A research statement (2 pages max) describing your personal research interests and previous research projects.**
- **A certified list of grades from your undergraduate degree(s) up to the moment of application (in case your MSc degree has not yet been awarded).**
- **The names and e-mail addresses of 2 academic referees who are willing and able to write recommendation letters for you, including the supervisor of your MSc research project.**
- **You may apply for this position until November 30th, 2025 17:00 Belgian local time (CET) by means of the project website Vacancies – project-react.eu.**
- **Applications will be evaluated as received.**

Commitment to Inclusion and Diversity

At iQrypto, we strive to build a workplace where all team members and collaborators feel respected, valued, and at home—regardless of their background, experiences, perspectives, or identities. We believe that fostering a culture of inclusion, equity, and mutual respect is a shared responsibility, and we are actively committed to creating a socially safe and supportive environment.
We recognize that diversity drives innovation and strengthens both our research and product development. Varied perspectives enrich our problem-solving and decision-making, especially as we tackle the complex challenges of quantum technology, secure hardware, and advanced electronics.

We therefore particularly encourage applications from individuals belonging to underrepresented groups in science, engineering, and technology.

Our recruitment process follows the principles outlined in the European Commission's Code of Conduct for the Recruitment of Researchers. We are committed to transparent, fair, and merit-based hiring practices, ensuring equal opportunities for all candidates.

While we are a startup headquartered in Mons, Belgium, and do not currently offer relocation services, we are happy to assist new hires in navigating local resources and support networks, including guidance for accompanying partners.

Please note: Unsolicited marketing or other inquiries will not be considered.

For further information, feel free to contact us at careers@iqrypto.com

Apply Instantly