

Vacancy: Embedded Software Engineer

About QSA Technology

QSA Technology is a University of Twente spin-out, born out of over a decade of photonics research at the MESA+ Institute, building photonic fingerprint chips that give quantum and optical communication networks a physics-based, unclonable identity. Quantum key distribution can make a key exchange itself unbreakable — but authenticating who is actually on the other end of the line has remained an open problem, one that current approaches still solve with the same cryptographic assumptions that quantum computers threaten. Our chips close that gap.

Having recently secured new funding, we are moving from lab-validated prototypes toward fielded systems, with our sights set on telecom, satellite, and critical-infrastructure security applications. We are growing our core technical team and running multiple funded international R&D projects alongside academic partners including the University of Twente and TU Eindhoven, with our first field pilot on real operator infrastructure on the horizon.

Our culture: open, entrepreneurial, and independent. As a spin-out, you will have plenty of freedom to develop your own ideas and make a direct impact.

Your Role

As an Embedded Software Engineer at QSA, you will build the software and firmware that turns our photonic PUF chips into a working authentication system. You will own the challenge-response protocol from readout through to decision, and build the interfaces that let our authentication layer talk to partner systems such as quantum key distribution hardware.

Responsibilities

- Developing firmware for PUF readout: challenge generation, optical measurement control, and response digitization
- Implementing the challenge-response authentication protocol: enrolment, verification, and decision logic
- Developing error-correction and helper-data algorithms for stable key extraction under real-world environmental conditions
- Designing and building integration APIs for partner systems, such as external quantum key distribution stacks
- Leading interoperability testing and validation of the combined system, including long-duration and security validation testing
- Documenting software architecture and test results to support product development and subsidy/project reporting

Who We Are Looking For

- MSc in Computer Science, Electrical Engineering, Physics, or a related field
- Strong Python and/or C(++) skills with real experience controlling hardware (instrumentation, FPGAs, or embedded systems)
- Comfortable working close to the metal: signal digitization, timing, and low-level protocol implementation

- Experience designing and documenting APIs, ideally for integration with external partners or systems
- Independent, entrepreneurial, and hands-on mindset
- Enthusiastic about working in a spin-out environment with freedom and responsibility

Nice to have:

- Experience with error-correcting codes or helper-data schemes (e.g. from PUF or biometric key extraction)
- FPGA or RFSoc development experience
- Exposure to cryptographic protocols or formal security analysis

What We Offer

- The opportunity to shape the software architecture of our authentication technology from day one
- Work in an innovative spin-out with direct impact
- High degree of independence and room for initiative
- Collaboration with institutes and industrial partners
- An inspiring work environment where pioneering is at the core

Interested?

Send your CV and a short motivation to [add contact email/link] — we would love to hear from you.