

Technische Universität Dresden (TUD), as a University of Excellence, is one of the leading and most dynamic research institutions in the country. Founded in 1828, today it is a globally oriented, regionally anchored top university as it focuses on the grand challenges of the 21st century. It develops innovative solutions for the world's most pressing issues. In research and academic programs, the university unites the natural and engineering sciences with the humanities, social sciences and medicine. This wide range of disciplines is a special feature, facilitating interdisciplinarity and transfer of science to society. As a modern employer, it offers attractive working conditions to all employees in teaching, research, technology and administration. The goal is to promote and develop their individual abilities while empowering everyone to reach their full potential. TUD embodies a university culture that is characterized by cosmopolitanism, mutual appreciation, thriving innovation and active participation. For TUD diversity is an essential feature and a quality criterion of an excellent university. Accordingly, we welcome all applicants who would like to commit themselves, their achievements and productivity to the success of the whole institution.

At the **Faculty of Electrical and Computer Engineering, Institute of Communication Technology**, the **Junior Professorship in Quantum Communication**, the **Excellent Cluster Centre for Tactile Internet with Human-in-the-Loop (CeTI)** offers a project position as

Research Associate / Postdoc (m/f/x)

(subject to personal qualification employees are remunerated according to salary group E 13 TV-L)

starting **as soon as possible**. The position is initially limited until December 31, 2025. The period of employment is governed by § 2 (2) Fixed Term Research Contracts Act (Wissenschaftszeitvertragsgesetz – WissZeitVG).

Task. CeTI's central vision is to enable humans to interact in quasi real-time with cyber-physical systems (CPS) in the real or virtual world over intelligent wide-area communication networks. Such advances go far beyond the current state-of-the-art approaches in computer and engineering sciences: intelligent communication networks and adaptive CPS for quasi real-time co-operations with humans require online mutual learning mechanisms, which are crucial challenges. To tackle these challenges, CeTI will conduct unique interdisciplinary research and will address major open research topics in key areas of the complexity of human control in the human-machine loop, sensor and actuator technologies, software and hardware designs, and the communication networks as the basis for several novel use cases grouped in medicine, industry, and the Internet of Skills.

For the realisation of ultra-reliable low-latency communications required by the Tactile Internet, quantum technologies have been proven to be necessary to go beyond the intrinsic limitations of classical technologies.

Description. The focus is on the integration of quantum resources/technologies in the Tactile Internet to collapse and avoid some intrinsic trade-offs of classical technologies. Especially, the work is on achieving low-latency, and high resilience and reliability. This should start from the practical/infrastructural aspects for the quantum technologies to be integrated in the architecture of the Tactile Internet. This can include applications for security, encoding of human sensorial data (audiovisual and haptics) and distribution of randomness. Current quantum technologies cannot satisfy data rates, latency, and sustainability. This means that careful design is necessary for understanding the ways to make quantum resources seamlessly applicable in the Tactile Internet.

Requirements: university and PhD degree in physics, mathematics, or equivalent; strong programming skills are highly recommended. Knowledge of quantum mechanics and focus on experimental physics is also an important metric. Candidates should be proficient in English and have good oral and written communication skills.

TUD strives to employ more women in academia and research. We therefore expressly encourage women to apply. The University is a certified family-friendly university and offers a Dual Career Service. We welcome applications from candidates with disabilities. If multiple candidates prove to be equally qualified, those with disabilities or with equivalent status pursuant to the German Social Code IX (SGB IX) will receive priority for employment.

Please send your application documents until **June 5, 2023** (stamped arrival date of the university central mail service applies) preferably via the TU Dresden SecureMail Portal <https://securemail.tu-dresden.de> by sending it as a single pdf document to kсениia.lemesheva@mailbox.tu-dresden.de or to:

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**TU Dresden, Fakultät Elektrotechnik und Informationstechnik,
Institut für Nachrichtentechnik, Deutsche Telekom Professur für Kommunikationsnetze,
z. Hdn. Herrn Jun.-Prof. Dr.-Ing. Riccardo Bassoli, Helmholtzstr. 10, 01069 Dresden, Germany.**
Please submit copies only, as your application will not be returned to you. Expenses incurred in attending interviews cannot be reimbursed.

Reference to data protection: Your data protection rights, the purpose for which your data will be processed, as well as further information about data protection is available to you on the website: <https://tu-dresden.de/karriere/datenschutzhinweis>.