

TUD Dresden University of Technology, 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 **Vodafone Chair of Mobile Communications Systems** offers, subject to the availability of resources, a position as

**Research Associate (m/f/x)**

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

starting **at the earliest possible date**. The position is limited to 18 months with the option of extension. The period of employment is governed by the Fixed Term Research Contracts Act (Wissenschaftszeitvertragsgesetz-WissZeitVG). The position offers the chance to obtain further academic qualification. Balancing family and career is an important issue. The position is generally suitable for candidates seeking part-time employment. Please indicate the request in your application. The Vodafone Chair of Mobile Communications Systems offers the opportunity to help shape the development of future mobile communication systems in a prosperous and dynamic environment, to gain valuable project experience and to establish and deepen contacts with innovative companies. Further information on the Vodafone Chair can be found at <https://mns.ifn.et.tu-dresden.de/>.

**Tasks:** You will conduct research in the field of highly energy-efficient spiking communications for wireless sensor systems within the ERC synergy project SWIMS. SWIMS vision is to propose a paradigm change for the design of future smart wireless sensory systems operating with stochastic spikes over the full sensor – signal-processing – communication chain offering a breakthrough with unrivalled energy efficiency. Special focus of your work will be on the algorithm design for spiking communications, in particular on i) the design of optimized spike modulation and encoding schemes w.r.t. the achievable rate and energy efficiency considering constraints of the algorithm implementation on neuromorphic spike processors and distortions due to analog spike processing, ii) stochastic modeling of the spike-based signal processing chain and iii) task-based communication including task-based encoding and task-based receiver ADCs. The performance of the derived concepts should be evaluated based on simulations and compared against theoretical limits. Moreover, the performance of the algorithms should be demonstrated in a spiking wireless sensory system hardware demonstrator in corporation with project partners. The results shall be published at international conferences and distinguished journals. With your work within the ERC synergy project SWIMS you will contribute to ground-breaking research and you will closely interact with top-notch European project partners.

**Requirements:** very good university degree in electrical engineering, communications engineering, information systems engineering, physics or similar; profound knowledge of wireless

communications, communications engineering, digital signal processing, communication and information theory; excellent mathematical skills to analyze and solve complex tasks in the field of wireless communications; experience in modelling and simulation of communication systems; a strong interest to pursue theoretical research; sound experience in programming with Matlab, Python or C++; outstanding academic performance in previous studies and some research experience; independent, goal- and solution-oriented work attitude; inter- and multidisciplinary thinking; an integrative and cooperative personality with good communication and social skills; advanced in English – written and oral.

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 submit your detailed application with the usual documents by **January 5, 2024** (stamped arrival date of the university central mail service or the time stamp on the email server of TUD applies) stating the **Job-ID w23-432**, preferably by sending it as a single pdf file to [jobs@ifn.et.tu-dresden.de](mailto:jobs@ifn.et.tu-dresden.de) (Please note: We are currently not able to receive electronically signed and encrypted data) or to: **TU Dresden, Fakultät Elektrotechnik und Informationstechnik, Institute of Communication Technology, Vodafone Stiftungsprofessur, Herrn Prof. Gerhard Fettweis, 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.

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**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>.