## Job posting

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### Title

**Research Assistant in the Field of Computational Time-of-Flight 3D Imaging**

### Institution

The position is located at the school of Electrical, Information and Media Engineering, Institute for High Frequency & Communication Technology, of the University of Wuppertal.

### Position

This position is to be filled for the period March 1, 2024 until February 28, 2027.
The position is to be filled with 100% of the tariff working hours (Part-time is possible, please state when applying whether you would also be interested in a part-time job)
Salary: E 13 TV-L

This is a qualification position within the meaning of the Science Time Contract Act (Wissenschaftszeitvertragsgesetz – WissZeitVG), which can be filled to promote the following scientific or artistic qualification: Acquisition of professional experience in the implementation of the DFG research project "All-Optical Off-Pixel Resonant Demodulation for Very-High-Resolution Time-of-Flight Imaging".
The duration of the employment contract shall be appropriate to the scientific qualification sought.

### Responsibilities

- Collaboration in the DFG research project "All-Optical Off-Pixel Resonant Demodulation for Very-High-Resolution Time-of-Flight Imaging"
- Development of methods for all-optical external demodulation for Time-of-Flight imaging exploiting fast micromirrors, this implies the design and simulation of tailored optical setups to implement the proposed methods
- Construction of one or several optical setups based on the performance insights gained from the simulations
- Development of a camera system including a high-resolution CCD imaging frontend, a modulated NIR illumination system, and an FPGA for centralized control and data acquisition; Interfacing with the micromirror control board, to be co-developed in parallel
within the project, is also foreseen; testing and validation of the developed camera system
- development of algorithms for demultiplexing and interpolation/demosaicking of the spatially-multiplexed camera data and for retrieving depth (distance) values from the latter
- extension of the aforementioned methods and evaluation procedures to the case of multiple observed depths per pixel (i.e., the multi-path effect) exploiting multi-frequency measurements
- demonstration of material imaging capabilities using the developed prototype, exploiting 3D features and neural networks as classifiers
- synergistic interaction and efficient team work with the other researchers of the project and with other ZESS group members
- the applicant should not only independently carry out the respective research project, but also participate in the organization of project workshops and the production of research reports and scientific publications

Requirements
- scientific university degree (Master or comparable or superior qualification) in Electrical Engineering, Physics, Computer Science, Communications Engineering or comparable
- outstanding grades over the academic vita
- very good knowledge of optics and imaging systems, additional knowledge of MEMS operation principles is highly desired, experience or knowledge of 3D sensing technologies and their principles of operation is an advantage
- proficiency in MATLAB, Python, or C++. Knowledge of FPGA programming
- genuine interest in interdisciplinary work
- team work capabilities, as well as good communication and organization skills
- very good knowledge of English (C1)

Application procedure (deadline etc.)
Dr.-Ing. habil. Miguel Heredia Conde will answer your questions about the position (herediaconde@uni-wuppertal.de).

Reference code: 23402

Applications including all relevant credentials (motivation letter, CV, proof of successful graduation, job references) should be addressed to Dr.-Ing. habil. Miguel Heredia Conde and solely submitted via the online portal of the University of Wuppertal: https://stellenausschreibungen.uni-wuppertal.de. Kindly note, that incomplete applications will not be considered.

The University of Wuppertal is an equal opportunity employer. Applications from persons of any gender are highly welcome. In accordance with the Gender Equality Act of North Rhine-Westphalia women will be given preferential consideration unless there are compelling reasons in favour of an applicant who is not...
female. The same applies to applications from disabled persons, who will be given preference in the case of equal suitability.

Application deadline: 2024-01-15

Contact

Dr.-Ing. habil. Miguel Heredia Conde (herediasconde@uni-wuppertal.de)