

At Helmut Schmidt University / University of the Federal Armed Forces Hamburg (HSU/UniBw H), Faculty of Electrical Engineering, Professorship for Chair in Signal Processing for Medical Applications – SigMA (Univ.-Prof. Dr. Madhu), a position is **available from the next possible date**

Research Assistant (m/f/d)

(salary group 13 TVöD [Collective agreement for the public service]; 39 hours per week)

for a limited period until 31.05.2029.

The research is being carried out as part of the externally funded research project 'Localisation and Identification of Acoustic Anomalies in Marine Engineering Systems (LIAS)', funded by the Defence Technology Agency for Ships and Naval Weapons, Maritime Technology and Research (WTD 71).

The research project aims to develop novel methods for localising and identifying (structure-borne) sound sources and other acoustic anomalies in maritime environments. The objective is to enable crews of maritime platforms to localise and identify sources of anomalies using existing on-board sensor networks, in order to detect faults at an early stage and initiate appropriate countermeasures. To this end, methods of stochastic signal processing and machine learning are used to aggregate and analyse multimodal sensor data. The methods developed are intended to support condition-based maintenance (predictive maintenance) and help to maintain the operational capability of maritime platforms or restore it as quickly as possible.

The thematic focus of the professorship is structured around the following three pillars:

- Algorithms for signal detection, enhancement and interpretation in communication, monitoring and assistance systems, including audio and speech processing
- Multimodal signal analysis and modelling for diagnostic, monitoring and decision-support applications, including information fusion, the integration of heterogeneous sensor modalities (e.g., ExG signals such as EEG and EMG, acoustic, vibration and environmental sensors), and multimodal generative models for enhancement, simplification and summarization
- Analytics and representation learning as a methodological basis for interpretable artificial intelligence (AI) and machine learning (ML), enabling transparent, robust and application-specific adaptation of computational models for detection, prediction and decision-making

Responsibilities:

- Investigation of methods for localising acoustic anomalies and identifying units exhibiting abnormal operating behaviour in marine engineering systems using an existing sensor network

- Development of a demonstrator to implement the investigated methods, based on available on-board and laboratory hardware (e.g. dSpace Rapid Control Prototyping), on board a suitable boat or ship
- Conducting, evaluating and documenting the results of test series, including field trials on board
- Presenting the research findings at scientific conferences
- Publishing in relevant specialist journals
- Possibility of further academic qualification (e.g. doctorate or habilitation)
- Carrying out general administrative work as well as academic activities in academic self-administration

Qualification requirements:

- A university degree (Diplom [univ.] or Master) in an engineering degree programme specialising in electrical engineering, telecommunications engineering, or a related field, completed with excellent academic performance

Furthermore desired:

- Knowledge of foreign language in English with a proficiency level that corresponds at least to the language level C1 of the Common European Framework of Reference for Languages
- A structured approach to work and an innovative and creative mindset
- Excellent communication and teamwork skills, reliability, independence, flexibility and discretion
- Solid knowledge and experience in the field of digital signal processing (both classical and stochastic)
- Knowledge of and initial experience with Python and MATLAB / Simulink
- Experience in the marine / maritime / marine engineering sectors

Features of this position:

- Capital-forming benefits
- Annual bonus payment
- Company pension scheme
- Flexible working hours
- DeutschlandJobTicket with employer subsidy if the necessary requirements are met
- Possibility of claiming a childcare place in a daycare centre close to the campus if the necessary preconditions are met
- You will benefit from targeted personnel development and an extensive range of further training and education opportunities.
- Budget-friendly meals in the campus canteen with three meals a day
- Possibility of participation in the corporate benefits program
- You have the opportunity to participate in workplace health promotion offers (for more information, see: www.hsu-hh.de/bgm/).
- Free parking on the campus grounds

- Possibility of using the Bundeswehr's own car-sharing service (for more information, go to: www.bwcarsharing.de).

If you have any academic enquiries, please contact the department at: sigma_mst@hsu.hamburg.

The employment is based on the TVöD in conjunction with the Wissenschaftszeitvertragsgesetz (German Act on Fixed-Term Scientific Contracts). In principle, the activities correspond to pay group 13. Classification up to pay group 13 of the TVöD shall be made in accordance with § 12 of the TVöD with regard to the activities to be performed on a more than temporary basis and the fulfilment of the personal or collective agreement requirements (job characteristics).

Part-time employment is possible.

The Federal Armed Forces promotes professional equality between women and men and therefore particularly welcomes applications from women.

In accordance with the Sozialgesetzbuch IX [Social Code Book IX] and the Disability Equality Act, we expressly welcome applications from severely disabled persons; the fulfilment of the requirements for the advertisement will be considered on an individual basis.

The German Armed Forces supports the goals of the National Integration Plan and welcomes applications from people with a migrant background.

More information about the university and the professorship can be found at:

www.hsu-hh.de and www.hsu-hh.de/ant/.

Please send your application with the usual documents exclusively in electronic form (pdf file), quoting the reference number **ET-0926**, by **05.10.2026** to:

personalabteilung@hsu-hh.de.

Note:

Information on data protection in the application process can be found on the website www.hsu-hh.de under the heading "Universität - Karriere - Datenschutzinformationen".

Applications without reference number will not be considered and will be deleted immediately for data protection reasons.

