

**Research Assistant / Doctoral candidate (m/f/d)  
at the Institute of Flight Systems at the Chair of Aeronautical Engineering  
of the Faculty of Aerospace Engineering  
on the topic**

**“Multimodal interaction with UAV “**

**(pay group 13 TVöD)**

at the earliest possible date on a full-time or part-time basis for a limited period of up to 5 years.

The Chair of Aeronautical Engineering at the Department of Aerospace Engineering works in the field of automation of manned and unmanned aircraft. In particular, we are investigating capabilities for sensor-based perception of the aircraft environment.

In the near future, UAVs will play an important role in urban smart mobility concepts, for example in the form of air taxis. These are not only networked with the urban infrastructure and other aircraft, but are also subject to higher safety requirements. In the event of an emergency landing, highly dynamic environments such as a road junction are difficult to assess even for human pilots. The possibility of incorporating the gestural communication of passers-by on site into the emergency landing phase could reduce the risk when determining a suitable landing zone. Previous work has laid the initial foundations for visual communication with UAVs using gestures, which will now be pursued further.

#### **Your tasks:**

- researching suitable methodological approaches for intuitive interaction between humans and UAVs during landing
- improvement of scene understanding and decision making of UAVs through real-time tracking of people, classification of dynamic gestures and semantic segmentation
- software development on an embedded platform
- evaluation of novel user interfaces through virtual simulation in the laboratory and during real flight tests

#### **Qualification Requirements:**

- a completed, scientific university education (Master/Diploma) in
  - Electrical engineering or computer science with a focus on e.g. robotics or computer vision
  - Aerospace engineering with a specialisation e.g. in flight guidance
  - or another comparable engineering and mathematical/scientific degree programme
- advanced knowledge of at least one programming language, e.g. Python, C++, MATLAB
- knowledge of sensor data processing (e.g. IMU, image processing, LIDAR, ...)

### We expect:

- Experience with deep learning approaches such as object recognition and semantic segmentation
- Experience with flight control systems such as Pixhawk 4 an advantage
- Knowledge of Linux and frameworks such as ROS an advantage
- Interest in experimenting with small UAVs and multicopters
- Enjoy independent, scientific work and the ability to share your own ideas with a team of dedicated colleagues

### We offer:

- an active promotion of your scientific development and the opportunity to do a doctorate in an optimal research and supervisory environment. Outstanding graduates of relevant degree programmes at universities of applied sciences are strongly encouraged to apply.
- a pleasant working atmosphere in an internationally orientated, dynamic team
- a state-of-the-art IT equipment - flexible working hours
- excellent networking opportunities
- a campus university with a very good infrastructure, in-house crèche and kindergarten (parents' initiative), a family service centre with advice and support for university members on how to better combine family, care and work, as well as excellent sports facilities
- opportunities for further training and certification in higher education didactics
- classification in pay group 13 takes place in accordance with § 12 TVöD with regard to the actual activities to be carried out and the fulfilment of personal and collective agreement requirements.
- mobile working / offer of teleworking possible by arrangement.

Employment can also be part-time if desired. The University of the Bundeswehr Munich aims to increase the proportion of female scientists and employees; applications from women are expressly welcomed. Persons with disabilities will be given special consideration if equally qualified.

### Have we raised your interest??

Please send your complete application (cover letter, CV, references, certificates) as soon as possible by **March 8th 2024** at the latest to:

Univ.-Prof. Dr.-Ing. Peter Stütz  
Professur für Luftfahrttechnik (LRT 13)  
Universität der Bundeswehr München  
85577 Neubiberg  
or via email to [peter.stuetz@unibw.de](mailto:peter.stuetz@unibw.de)

By submitting your application, you consent to your personal data being stored, processed and forwarded to the departments involved in the application process for the purposes of the application. You can find more information on data protection under the following link: [Privacy Policy](#).

**We are looking forward to your application!**