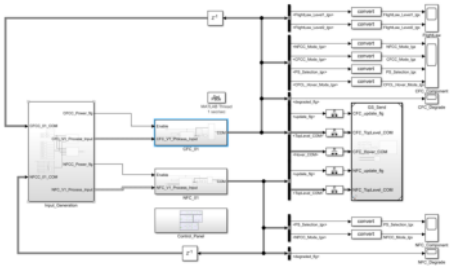
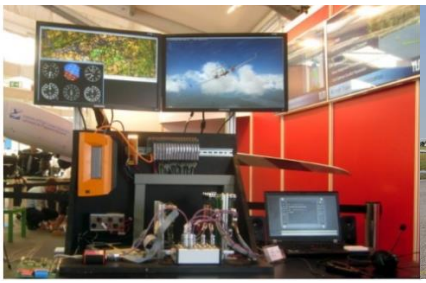
Lehrstuhl für Flugsystemdynamik
Fakultät für Luftfahrt, Raumfahrt und Geodäsie
Technische Universität München

The Institute of Flight System Dynamics is offering full-time vacancy for a

Research Associate (Ph.D. Candidate) (m/f/d): Flight Control System Automation

starting as soon as possible.


About Us

We make Visions Fly – As an application driven research institution, at the Institute of Flight System Dynamics we strive to apply the latest developments in research and technology to real-world platforms and demonstrate their application inflight. Current applications include flight guidance, navigation and control for general aviation aircraft, large helicopter drones, turboprop aircraft and currently especially large manned electric take-off and landing vehicles (eVTOL – also known as air taxies or Urban Aerial Mobility).

With TUM-FSD delivering innovative flight control solutions for real world manned aircraft and eVTOLs, safety is of utmost importance. The unique flight mechanics of these novel aircraft configurations provide the basis for innovative system automation and failure mitigation concepts to maintain safety of flight even in the presence of abnormalities.

The functions we are developing for that purpose include automation of procedures and logics that support an intuitive operation of the system, in-time detection of abnormalities with safe reconfiguration to degraded system modes. Apart from the functions themselves, the operational environment requires specific care in the design. Aspects like system timing properties as well as the comfort for the operating crew need to be considered, each representing an area of research on its own. By using model-based design techniques and tool-chains for efficient automation of design tasks like validation and testing, we aim at a lean development life cycle of safety critical flight control systems.

Your responsibilities

We are looking for a PhD candidate eager to contribute in the development of Redundancy Management and System Automation functions. The design, implementation and verification of novel functional approaches and algorithms will be your responsibility. You will have the opportunity to gather hands-on experience throughout the entire development lifecycle. In close cooperation with our industrial and academic partners, you will start with the formulation of requirements that are both functionally and safety driven, you will design and implement software and proceed with integration and testing in Model-in-the-loop Simulations and our experimental Flight Simulators. Finally, you will have the possibility to participate in flight test campaigns and see the results of your work take off.

Your tasks include:

- Function development and application in real-life research and development projects culminating in real flight tests on manned and larger unmanned aerial vehicles (take-of weights above 500kg)
- Research in the field of Redundancy Management and System Automation. Possible research topics include:
    - Flight Control Law Monitoring and Automation
    - Voting algorithms based on Soft Computing
    - Enhanced Air Data Fault Detection and Isolation
    - Design tools that support the development process
- Support in teaching, depending on your field of interest

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Your qualifications

- Master's degree or Diploma in aerospace engineering, electrical engineering, computer science or a related field
- Excellent grades
- Diligent, structured and transparent methodology
- Willingness to demand and receive feedback on a regular basis
- High level of commitment, with the ability to work in a team as well as autonomously
- Interest and initial experiences in aerospace safety assessment and system development processes desirable
- Strong MATLAB and Simulink skills required, Stateflow is also welcome
- Basic knowledge of Flight Mechanics and Flight Control is required
- Basic programming skills welcome
- Hobbies in the aviation or drone sector or a private pilot license are a plus

Our offer

We offer a young and dynamic environment and a competent and inter-disciplinary team of international researchers. As part of the Institute of Flight System Dynamics you have the possibility to work on state of the art and real-world research topics and shape the future of aviation. You are encouraged to take responsibility within your project as well as in the daily work at the institute and thereby acquire professional and interdisciplinary skills. The full-time position as academic staff gives you the opportunity to pursue a doctoral degree. The position will be limited to three years. Payment will be based on the Collective Agreement for the Civil Service of the Länder (TV-L E13).

TUM and the Institute of Flight System Dynamics strive to raise the proportion of women in its workforce and explicitly encourages applications from qualified women. Applications from disabled persons with essentially the same qualifications will be given preference.

Your application

We are looking forward to your detailed application, which should include at least:

- Your current CV
- High School Diploma,
- University Diploma or Transcript of Records,
- Extract of your ranking, if available,
- Your available Bachelor/Master/Diploma Theses.

If you are interested in joining our team, please send your application, preferably by email, to

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