Institute of Flight System Dynamics
Department of Aerospace and Geodesy
TUM School of Engineering and Design
Technische Universität München

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

Research Associate (Ph.D. Candidate) (m/f/d):

Contingency Trajectory Optimization for Transition eVTOLs

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, trajectory optimization and parameter identification for general aviation aircraft, large helicopter drones, turboprop aircraft and especially manned electric vertical take-off and landing vehicles (eVTOL).

Safety, robustness and energy efficiency are of utmost importance for the operation of electric aircraft in urban air mobility. In the joint research project *Low Energy Emergency Trajectories (LowEET)* between TUM and Kempten University of Applied Sciences we develop high-fidelity trajectory optimization methods for offline generation of contingency trajectories to obtain safe system performance under critical battery energy levels.

Your tasks

- Modeling of eVTOL flight dynamics and urban airspace (environment, landing sites, fly-/no-fly zones)
- Development of automated optimal control functionalities for contingency trajectories with low battery energy levels
- Safety assessment of contingency trajectories with low battery energy levels
- Publication and presentation of research results on conferences and in journals
- Teaching and other institute activities

Your qualifications

- Excellent Master's degree or Diploma in aerospace engineering, electrical engineering, computer science or a related field
- Interest and initial experience in applied optimal control and trajectory optimization
- Good knowledge of flight mechanics
- Excellent MATLAB and Simulink skills
- General programming skills beneficial
- Diligent, structured, and transparent working style
- 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

Our offer
We offer a young and dynamic environment comprising a competent and interdisciplinary team of international researchers. As part of the Institute of Flight System Dynamics you have the opportunity to work on state of the art and real-world research topics and shape the future of aviation. You are encouraged to assume 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 their workforce and explicitly encourage applications from qualified women. Applications from disabled persons with essentially the same qualifications will be given preference.

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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 to **application.fsd@ed.tum.de** with the subject "**Application Contingency Trajectories**" until **January 29th 2023**.

As part of your application, you provide personal data to the Technical University of Munich (TUM). Please view our privacy policy on collecting and processing personal data in the course of the application process pursuant to Art. 13 of the General Data Protection Regulation of the European Union (GDPR) at https://go.tum.de/554159. By submitting your application, you confirm to have read and understood the data protection information provided by TUM.