

## MUNICH AEROSPACE – NEW HORIZONS IN AVIATION AND SPACE

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In 2010, through Munich Aerospace and its pooling of research, graduate programmes and teaching, an alliance has been formed between the **Technical University Munich (TUM)**, the **Bundeswehr University Munich (UniBwM)**, the **German Aerospace Center (DLR)**, as well as **Bauhaus Luftfahrt (BHL)**.

To promote excellent, scientific young academics, Munich Aerospace awards a PhD scholarship on

### Efficient structure exploitation on GPUs for discretized optimal control problems

The PhD scholarship is part of the Munich Aerospace Research Group “**Robust and efficient real-time flight path optimization**”. The Munich Aerospace Research Group comprises two PhD scholars and further members from the Chair of Flight System Dynamics of the TU Munich and the Engineering Mathematics group at the Bundeswehr University Munich. A close collaboration within the research group is expected, especially between the scholarship recipients. The advertised PhD scholarship will be affiliated to the Engineering Mathematics Group at the Bundeswehr University Munich and develops mathematical methods for modelling tasks, simulation tasks and especially optimization and control tasks for dynamic processes in engineering applications.

#### Your tasks

- Development and implementation of efficient structure-exploiting numerical optimal control methods for real-time control
- Application of robust optimization-based model-predictive control techniques to flight trajectory optimization of UAVs
- Validation in flight tests
- Self-responsible work on the research project
- Presentation and publication of scientific results

#### Your profile

- Very good Master’s degree in mathematics, applied mathematics or a related engineering discipline
- Good background in applied control, optimal control or optimization
- Good and efficient programming skills, preferably in C/C++
- Ability to work in a team on a scientific level
- Excellent English or German skills (German skills are beneficial)
- Completion of university degree not more than three years prior to the application for the scholarship

The Engineering Mathematics group and the Bundeswehr University Munich offer an excellent research environment with up to date laboratory equipment to realize your ideas. The group consists of a highly motivated and interdisciplinary team of mathematicians and engineers. The team will support you during your personal and scientific development.

## The Scholarship

The Munich Aerospace scholarship amount is 1.575 € per month granted for a minimum of 12 months and limited to a maximum of 3 years. Munich Aerospace scholarship holders are entitled to attend the Munich Aerospace Graduate School, formed by the TUM Graduate School and the DLR\_Graduate\_Program, and have access to special events and trainings. An additional grant of up to 6.100 € per year will be available to cover expenses that are directly related to the PhD project (e.g. textbooks, laptop, conference travels, public transport, housing subsidy). The scholarship holder is part of a Munich Aerospace research group and receives additional technical support from the research group head. The PhD can take place either at TUM or UniBwM.

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## Interested?

Please send us your application including relevant documents (cover letter, CV, diplomas, transcript of records) in PDF format to [matthias.gerds@unibw.de](mailto:matthias.gerds@unibw.de). The application deadline is March 15, 2021.

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