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DLR – DAAD Fellowships

Fellowship No. 586

Research Area : Space

Research Topic: **Adapting unfolding-based dynamic partial order reduction for spacecraft operational behaviour verification in early design**

DLR Institute: Institute for Software Technology, DLR Braunschweig, Germany

Position: Postdoctoral Fellow

Openings: 1

Job Specification: The operational behaviour of a spacecraft needs to be modelled in early phases. It can be represented in state machines, transitions and triggering sequences. With hybrid models these state machines can be extended by time-continuous behaviour, usually described in differential equations. Depending on the complexity of the overall spacecraft, potentially dangerous states such as depleted batteries cannot be completely tested for absence. It is envisaged to use hybrid model checking as a complete verification method. Nevertheless, this approach is confronted with the state space explosion problem and the need for time-continuous behaviour above first order. Therefore, it is needed to investigate methodologies to reduce the state space that needs to be explored by e.g. partitioning, and explore potential methods for model checking hybrid systems of higher order.

Required Qualification:

- A PhD in Computer Science with a focus on formal verification of complex safety critical systems.
- Fundamental knowledge in the area of hybrid model checking.
- Fundamental knowledge in software development with tools such as Python and C++.
- Knowledge of software engineering tools such as Git, GitHub Actions, Unit Testing, etc.

- Knowledge in software development with tools such as VS Code, Conda, Docker.
- Knowledge in working with Linux workstations including bash.
- Experience in the area of Model Based Systems Engineering for spacecraft.
- Team player, creative, and able to work independent and self-motivated.
- Required to publish and travel to national and international conferences.
- Fluent in spoken and written English (knowledge of German is an asset).

English competence: See requirements on www.daad.de/dlr

Earliest Start Date: As soon as possible

Application Deadline: Until position filled

Further Information: <http://www.dlr.de>
<http://www.daad.de/dlr>

More information may be obtained by contacting:
Prof. Dr. Andreas Gerndt (Andreas.Gerndt@dlr.de)

Thank you for your attention!
We look forward to receiving your application!