

PhD student/Doctoral candidate in high reliable automation and assistance (HRA) • Universität Duisburg-Essen • Duisburg

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|-----------------------------|--|
| Open Positions | 1 |
| Time Span | 29 Feb 2020 for 36 months |
| Application Deadline | 31 May 2019 |
| Financing | no |
| Type of Position | <ul style="list-style-type: none">• PhD - Doctoral Programme |
| Field of Research | <ul style="list-style-type: none">• Engineering |
| Subjects | Dynamics and Control |
| Description | <p>The realization of safe and reliable technical systems is an important engineering task. With respect to the realization of autonomous systems (highly automated driving as example) and semiautonomous, guided systems (human-machine-system with automated guidance or assistance) or arbitrary other system of safety relevance the safety, the functionality, as well as the availability of the system has to be considered within the project. Beside the discussion about hardware (reliability,</p> |

topology) also the functionality of software/algorithms should be considered. Dynamic risk assessment or similar new approaches and methods relating systems, tasks, and situations together new research has to be done. Beside the development of method(s) we validate our approaches using our own test equipment or suitable simulation examples. Using our professional driving simulator we are able to realize driver-in-the-loop experiments. In other projects the driving simulator is combined with our hybrid powertrain simulator (HIL-test rigs with batteries, supercaps etc.). Actually we are increasing our hardware platforms with the goal also to test autonomous/semiautonomous/assisted guidance of unmanned aerial vehicles. In this context industry automation hardware based on standard PLC as well as highspeed PLC's are to be integrated.

The next intended research development steps concentrate on

- modeling of dynamic reliability characteristics.
- design of topologies of high reliability
- defining compromises between safety, cost, reliability, availability, complexity
- integrating of automation systems
- defining challenging examples like HRA-based human-machine-system (guiding drones, guiding machines, guiding vehicles, etc.).

Therefore we need students from the reliability/safety engineering i) strong engineering programming and/or algorithm design skills, ii) strong background in reliability/safety methods, and iii) automation/engineering background. If two of the three requirements are fulfilled, feel free to apply.

From the new candidate we expect that s/he is willing to become very fast an important and

valuable member
of our CTS
(cognitive
technical
systems) team
within the Chair.
Therefore we
expect
i) a shown and
strong expertise
in related
scientific fields to
be integrated,
ii) your ability and
commitment to
develop and
validate NEW
methods and
approaches, and
iii) your
willingness and
commitment to
write scientific
contributions on a
world class level.
In case of interest
please provide
beside the usual
application
material (CV,
grades, ...)
material stating
that you have
strong English
language skills
(TOEFL IBT
better than 95,
IETLS better than
6.5) and a
detailed and
described interest
ONLY in the
described
research fields.
Your German
language skills
can be (if
necessary)
improved by
language courses
in parallel (for
example at the
Goethe Institute,
Düsseldorf) (on
your cost). For
further
information about

the requirements
see also the
website of the
Chair SRS:
[www.uni-
due.de/srs/prospective](http://www.uni-due.de/srs/prospective).

Be aware about
the time schedule
of your DAAD-
application:
application now
or in
September/October
year 1 leads to
the beginning of
german language
courses in
May/June year 2
and start PhD
research at the
Chair SRS in
October year 2.
In case of other
application
(government
programs,
national/university
training
programs):
You should be
supported for
more than 3,5
years. In case of
support for less
than 3,5 years,
you should
convince us
based on existing
international
publications from
the last five
years.
The successful
candidate is
primarily directly
related to:
Prof. Söffker
(Scientific
supervisor: Prof.
Söffker)

Specific
prerequisites:
Bachelor and
Master degree in

Electrical or
Mechanical
Engineering or
Information
science or
Mathematics or
Automation/Control
(with strong
interests in
programming)
(with clear related
specification)
necessary, deep
interest in the
field, excellent
grades in related
courses.

Next steps:

1. Be aware of
your national
DAAD application
deadline (which
varies between
February and
November each
year).
2. Contact Prof.
Söffker directly by
E-Mail (
[soeffker@uni-
due.de](mailto:soeffker@uni-due.de)
[mailto:soeffker@uni-
due.de], subject:
DAAD-Appl.
HMS) and send
copy of CV,
certificates,
recommendation
letters as well as
a first proposal
(2-3 pages) about
your
understanding of
the intended
topic, your
intended working
schedule, the
state of the art in
this field as well
as the deduced
definition of your
project. A 'copy
and paste'-
strategy will
disqualify you
immediately.

3. Be aware about the time schedule of your application:
DAAD example application in September/October year 1 leads to begin language courses in May/June year 2 and start PhD research in October year 2.

4. Joint improvement of the proposal: If the quality of the project proposal is finally fitting to the groups standard (=perfect) Prof. Söffker will invite you by writing the required acceptance letter.

5. The final decision is with the DAAD committees.

About the Chair SRS (Head: Prof. Söffker) at U DuE, Germany:
With a mix of coworkers and PhD students financed by the university or by public funding, coworkers and PhD students financed by industry projects and PhD students financed by their home countries or by DAAD scholarships the Chair has a large tradition in supervising academic

trainees. The internal organization scheme will allow an improved organization of the academic work of the PhD students in guided groups. Academic qualification includes not only the PhD topic related work but also advising coworking students (Bachelor/Master level) based on individual qualification and skills etc.

Requirements

- University degree on the level of a Master (e.g. of Science, of Engineering) in Mechanical Engineering, Electrical Engineering, or a mentioned specific area of an accredited institution.
- Very good written and spoken English language skills (TOEFL IBT better than 95)
- Very good communication skills
- Able to work in an open minded, very international team
- Very good mathematical background and programming skills
- Understanding of what system theory, control technique, and system dynamics means in this field. Additionally the understanding of how such systems are technically realized is required.
- Readiness to learn german initially and for continuously improvement of language skills (during the whole time of PhD work)

Working Language

- English
- German

**Language of
Dissertation**

- English

Required Documents

- CV
- Reports,
certificates
- Letter of
Motivation
- Research
Proposal

More Information

[http://www.uni-
due.de/srs/prospective](http://www.uni-due.de/srs/prospective)
[[http://www.uni-
due.de/srs/prospective](http://www.uni-
due.de/srs/prospective)]

Shortlink: daad.de/go/en/phd3809 [[//daad.de/go/en/phd3809](http://daad.de/go/en/phd3809)]

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