PhD Project

Data driven-based behavior prediction (for control) (DDBP)

Knowing the future is often helpful but sometimes really complicated.

In some projects of the Chair this knowledge may be helpful and is generated with the help of data driven approaches or even classical filters.

The specific fields of research of the Chair SRS we want to know more >> predict the future more precise:
- Wind flow conditions on a very local scale (100 mtr./0-2 minutes)
- Wave behavior on a local scale (in situ, 0-1 minutes)
- Behavior of encountering vessels using clustered knowledge (1000 mtr, 0-5 minutes)
- Behavior of human drivers (next 0-8 sec.)

Goals of this work is to build (clustered and classified) suitable knowledge, design suitable algorithms (e.g. filters) and to predict the behavior on a short time range.

Especially in the case of wind turbine control and wave control the new approaches can be directly be integrated. If the candidate decides to work more in the –rule-based behavior- field the strategy hast to be suitabled modified, in this case the candidate also becomes the chance to close the loop together with other PhD students using suitable simulators.

Therefore we need a student from the control and automation and/or the mechatronics and/or the mechanics/dynamics field or from mathmatics with a

i) strong interest in filtering (EKF-like ones or similar) or in Machine Learning,
ii) strong engineering programming and/or simulation skills, or
iii) automation/control engineering/dynamics background.
If two of the three requirements are fullfilled, 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 MMS (Methods, Mechatronics and System Dynamics) 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 ability 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.

About you:

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. Related and/or diverse qualifications can possibly also be very attractive.

About us:

Chair SRS (Head: Prof. Söffker) at U DuE, Germany:

With a mix of coworkers and PhD students the Chair has a strong and long 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.

The PhD students working in the group are financed by the university or by public funding, financed by industry projects, by their home countries or by DAAD scholarships.

Be aware about the time schedule of your DAAD-application:

An 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)

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, 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.

Chair of
Dynamics and Control

www.srs.uni-due.de