

Assistant Professor in Control and Optimisation of Spatio-Temporal Systems

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Challenge: Modelling the evolution dynamics of spatio-temporal systems, for example the spread of infectious diseases, needs an accurate mathematical representation of the reaction and diffusion processes, for example via complex, nonlinear partial differential equations. Control and optimisation of these infinite dimensional systems require radically new methodologies that are capable of adapting to the system parameters and statistics over space and time.

Change: Develop a mathematical theory, efficient control and optimization policies to maximize the robustness and the performance of spatio-temporal systems, for example to minimize the impact of epidemics on public health, social life, healthcare system and economy.

Impact: New fundamental methods and breakthroughs in control and optimization of spatio-temporal dynamical systems with applications in epidemic control.

Job description

The Delft Center for Systems and Control (DCSC) of Delft University of Technology (TU Delft), The Netherlands, announces an open position for a Tenure Track Assistant Professor in the broad field of Control and Optimisation of Spatio-Temporal Systems.

Domain of research

The research area of the position will be oriented towards fundamental methods and methodologies in one or more of the following fields (non-exhaustive list):

- Spatio-temporal system modelling and analysis
- Reaction-diffusion system modelling and analysis
- Adaptive control of partial-differential systems
- Multi-objective optimization of partial-differential systems
- Epidemic mitigation and control,

or any other similar or related topic along these lines that falls into the field of spatio-temporal systems and control. Prospective research activities involve the development of systematic and computationally efficient modeling, analysis, control, and/or optimization methods within the topics listed above.

Within this position applications of the developed fundamental methods should be targeted towards control and optimization of epidemic systems; or application fields that could connect to current application fields at DCSC, such as health, socio-technical and biological networks, transportation systems, infrastructure networks; or that could focus on a completely new field within DCSC that is related to the current research fields of the Faculty of Mechanical, Maritime and Materials Engineering (see <https://www.tudelft.nl/en/3me/research/check-out-our-science/>).

Position

The position offered is a tenure-track position for a period of 6 years, leading to a permanent position assuming excellent performance. The position can either be a full-time one, or if you request it, a part-time one (80% or higher). During the tenure track, you will have the opportunity to develop into an internationally acknowledged and recognized academic. To this aim, we offer a structured career and personal development program.

The department Delft Center for Systems and Control (DCSC) of the faculty Mechanical, Maritime and Materials Engineering, coordinates the education and research activities in systems and control at Delft University of Technology. The Centers' research mission is to conduct fundamental research in systems dynamics and control, involving dynamic modelling, advanced control theory, optimisation and signal analysis. The research is motivated by advanced technology development in physical imaging systems, renewable energy, robotics and transportation systems.

Requirements

We are looking for a candidate with a PhD degree in systems and control, computer science, applied mathematics, mechanical engineering, electrical engineering, or a related field, and with expertise in the broad fields of epidemic systems, control, and optimisation. You should preferably have at least 1 year of post-doctoral experience. You should already have gained an international reputation in your field of research and also have a proven track record in conducting innovative fundamental research, demonstrated by the ability to publish in leading international journals. You are expected to have an ambitious vision on the development of your own research program and to establish cooperation with other groups at the university, national, and international level.

You should also have the didactic abilities for teaching systems and control courses at the BSc, MSc, and postgraduate level, and for supervising MSc projects. Experience with teaching and mentoring is considered an advantage. The ability to work in a team and inspire others, to take initiative, to be results-oriented, as well as good communication skills in verbal and written English are essential requirements.

In accordance with the equal opportunity policy of Delft University of Technology, female candidates in particular are encouraged to apply.

Conditions of employment

A tenure-track position is offered for six years. In the fifth year we'll decide if you will be offered a permanent faculty position, based on performance indicators agreed upon at the start of the appointment. We expect that you have the potential to grow towards an Associate Professor and/or Full Professor role in the future.

Inspiring, excellent education is our central aim. We expect you to obtain a University Teaching Qualification (UTQ) within three years if you have less than five years of teaching experience. This is provided by the TU Delft UTQ programme.

TU Delft sets high standards for the English competency of the teaching staff. The TU Delft offers training to improve English competency. If you do not speak Dutch, we offer courses to learn the Dutch language within three years.

Salary and benefits are in accordance with the Collective Labour Agreement for Dutch Universities. The TU Delft offers a customisable compensation package, a discount on health insurance and sport memberships, and a monthly work costs contribution. Flexible work schedules can be arranged.

For international applicants we offer the [Coming to Delft Service and Partner Career Advice](#) to assist you with your relocation. An International Children's Centre offers childcare and there is an international primary school.

TU Delft (Delft University of Technology)

Delft University of Technology is built on strong foundations. As creators of the world-famous Dutch waterworks and pioneers in biotech, TU Delft is a top international university combining science, engineering and design. It delivers world class results in education, research and innovation to address challenges in the areas of energy, climate, mobility, health and digital society. For generations, our engineers have proven to be entrepreneurial problem-solvers, both in business and in a social context.

At TU Delft we embrace diversity as one of our core [values](#) and we actively [engage](#) to be a university where you feel at home and can flourish. We value different perspectives and qualities. We believe this makes our work more innovative, the TU Delft community more vibrant and the world more just. Together, we imagine, invent and create solutions using technology to have a positive impact on a global scale. That is why we invite you to apply. Your application will receive fair consideration.

Challenge. Change. Impact!

Faculty Mechanical, Maritime and Materials Engineering

The Faculty of 3mE carries out pioneering research, leading to new fundamental insights and challenging applications in the field of mechanical engineering. From large-scale energy storage, medical instruments, control technology and robotics to smart materials, nanoscale structures and autonomous ships. The foundations and results of this research are reflected in outstanding, contemporary education, inspiring students

and PhD candidates to become socially engaged and responsible engineers and scientists. The faculty of 3mE is a dynamic and innovative faculty with an international scope and high-tech lab facilities. Research and education focus on the design, manufacture, application and modification of products, materials, processes and mechanical devices, contributing to the development and growth of a sustainable society, as well as prosperity and welfare.

Click [here](#) to go to the website of the Faculty of Mechanical, Maritime and Materials Engineering. Do you want to experience working at our faculty? This [video](#) will introduce you to some of our researchers and their work.

Additional information

For more detailed information on the position, please contact Prof. Sergio Grammatico, s.grammatico@tudelft.nl.

For information about the application procedure, please contact Irina Bruckner, HR Advisor, application-3me@tudelft.nl.

Application procedure

Are you interested in this vacancy? Please apply by 31 August 2022 via the application button and upload your letter of application stating your motivation for this position and why the proposed research topic interests you, along with a curriculum vitae or resume, a personal research and teaching statement, as well as a list of publications, links to or electronic copies of three key publications, and the names and email addresses of three referees, compiled into a single pdf file via the Delft University of Technology vacancies website.

A pre-employment screening can be part of the selection procedure.

You can apply online. We will not process applications sent by email and/or post.

Acquisition in response to this vacancy is not appreciated

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