Delft Center for Systems and Control

Delft University of Technology

The Delft Center for Systems and Control (DCSC) of Delft University of Technology, The Netherlands has a vacancy for a 4-year **PhD position** on

Data-driven approaches for monitoring and assessing contaminants in marine environments

Project description

In this PhD project we will develop novel data-driven and machine-learning-based approaches for monitoring, assessing, and forecasting the evolution of concentration of contaminants (such as microplastics, antibiotics, etc.) in coastal and ocean waters.

This PhD project is part of the Horizon Europe project ONE-BLUE (Integrated approach to assess the levels and impact of contaminants of Emerging concern on BLUE health and biodiversity modulated by climate change drivers). Contaminants of emerging concern (CECs) comprise a large variety of contaminants, including chemicals, microplastics, antibiotics, etc. CECs have been found in marine environments, and the bio-accumulation and bio-magnification of some CECs has been proven. In this context the goal of ONE-BLUE is to develop an integrated system for monitoring CECs in coastal and ocean waters, and assessing and forecasting their impact on marine ecosystems and their biodiversity, including combined effects due to climate change.

In this PhD project we will support the ONE-BLUE objectives and focus on four interacting topics:

- Modeling of CECs, which includes enhancement of existing CEC models with newly collected data within ONE-BLUE, and development of data-driven approaches to obtain up-to-date models for CEC monitoring in marine ecosystems.
- Sensor fusion for CEC parameters, i.e. the development of innovative sensor fusion methods to infer CEC values that are not measured directly and values at places with no or only partial measurements.
- Forecasting of CEC parameters, which includes the development of integrated data- driven and model-based methods for estimating and forecasting CEC data in both space and time based on sparse measurements/data.
- Integrated data-driven and model-based methods for early warning and decision support. Here, we will also use a combination of optimization-based and learning-based approaches, as well as model-based and data-driven approaches.

The PhD student will join our machine learning and optimization team at the Delft Center for Systems and Control (DCSC) of Delft University of Technology. At the DCSC, our overall mission is to conduct foundational research in systems and control, involving dynamic modeling, advanced control theory, and optimization with societally important application fields including energy, transportation, and sustainability.

What do we ask?

This position is perfect for you if you have an MSc degree in systems and control, applied mathematics, AI, computer science, electrical engineering, or a related field, and a strong background or interest in systems & control and/or machine learning. You are also expected to work on the boundary of several research domains.

A good command of the English language is required and has to be demonstrated, by being a native speaker, having obtained an English-taught MSc degree, a TOEFL overall band score of 100 (with scores of at least 21 for all sections), or an IELTS overall band score of 7.0 (with scores of at least 6.5 for all sections).

What do we offer?
We offer the opportunity to do scientifically challenging research in a multi-disciplinary research group. The appointment will be for up to 4 years. The PhD student will also be able to participate in the research school DISC (https://disc.tudelft.nl). As an employee of the university you will receive a competitive salary starting of EUR 2770 gross per month in the first year and rising to a maximum of EUR 3539 gross per month based on a full-time appointment, as well as excellent secondary benefits in accordance with the Collective Agreement (CAO) of the Association of Universities in the Netherlands (VSNU). Assistance with accommodation can be arranged.

How to apply?
Are you interested in this vacancy? Please apply by January 8, 2024 via the "Apply now" button on the application webpage
https://www.tudelft.nl/over-tu-delft/werken-bij-tu-delft/vacatures/details?jobId=15071
and upload your letter of application along with a detailed curriculum vitae, a motivation why the proposed research topic interests you, a list of publications (if applicable), the abstract and/or summary of your MSc thesis, your BSc and MSc course program and the corresponding marks, names and addresses of two to three reference persons, and all other information that might be relevant to your application.
More information on this position can be obtained from Bart De Schutter (email: b.deschutter _at_ tudelft.nl).

The application deadline for the position is January 8, 2024. However, the position will stay open until a suitable candidate has been found.