

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

Machine-learning-based classification and control for cleaning coastal waters using autonomous vehicles

Project description

In this PhD project we will develop novel machine-learning-based approaches for control and classification in the context of autonomous unmanned underwater, surface, and aerial vehicles for locating, detecting, and collecting unwanted objects from coastal waters and seabeds.

The PhD project is part of the European H2020 project SeaClear (SEarch, identificATIOn and Collection of marine Litter with Autonomous Robots). The goal of SeaClear is to develop a collaborative, heterogeneous multi-robot solution engaged in collecting marine waste using autonomous underwater, surface, and aerial vehicles for cost-effective marine litter detection and collection. This goal will be reached by bringing together state-of-the-art technologies from the fields of machine learning, sensing, manipulation, aerial and marine technologies and by building a stable and reliable system capable of tackling a highly relevant social, economic and environmental issue, namely ocean pollution.

In the PhD project we will focus on two main topics: (1) the development of debris identification and classification methods using the various sensors on-board of the underwater, surface, and aerial vehicles, and (2) control design for higher-level activities such as cooperative control, task allocation, and planning. We will also put specific emphasis on mapping as an intertwined sensing and control problem. For topic (1) deep learning will be the primary solution direction, while for topic (2) we will use a combination of cooperative and distributed control, model-based control, and reinforcement learning.

What do we ask?

We are looking for a candidate with an MSc degree in systems and control, applied mathematics, computer science, electrical engineering, or a related field, and with a strong background or interest in control and/or machine learning. The candidate is expected to work on the boundary of several research domains. A good command of the English language is required.

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://www.disc.tudelft.nl>). As an employee of the university you will receive a competitive salary starting of EUR 2325 gross per month in the first year and rising to a maximum of 2972 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?

Submit 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 to Prof. Bart De Schutter (email: b.deschutter_at_tudelft.nl).

More information on this position can be obtained from Bart De Schutter.