

The Delft Center for Systems and Control (DCSC) of Delft University of Technology, The Netherlands has a vacancy for a 2-year **postdoc position** on

## **Machine-learning-based classification and control for safe cleaning of coastal waters using autonomous vehicles**

### **Project description**

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

The postdoc 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: ocean pollution.

In the postdoc project we will primarily focus on the development of novel identification and classification methods for both debris and marine life using the various sensors on-board of the underwater, surface, and aerial vehicles. In addition, we will also explore the integration with control tasks such as moving to the debris object and grasping it while avoiding any harm to marine life. To address these topics we will use deep learning as well as 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 PhD degree in systems and control, computer science, applied mathematics, or a related field, and with a strong background or interest in machine learning, in particular deep learning and reinforcement learning. Additional experience in model-based and optimization-based control is an asset. 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 2 years. As an employee of the university you will receive a competitive salary (between approx. EUR 3389 and EUR 4274 gross per month based on a full-time appointment and depending on your qualifications), 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.

The position can either be a full-time one, or if the successful candidate requests it, a part-time one (80% or higher). In accordance with the equal opportunity policy of Delft University of Technology female candidates are in particular encouraged to apply.

### **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, (electronic) copies of your three most relevant journal or conference publications, the abstract and/or summary of your PhD thesis, your MSc course program and the corresponding grades, names and addresses of 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](mailto:b.deschutter_at_tudelft.nl)).

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

The application deadline for the position is June 15, 2020. However, the position will stay open until a suitable candidate has been found.