

2 Post-Doctoral Researcher vacancies at Delft University of Technology on:

- **Robotic waterborne structures & logistics**
- **Dynamic fleet management of autonomous vehicles**

The Department of Maritime & Transport Technology at Delft University of Technology invites expressions of interest for two currently open post-doctoral research positions on initiating new research lines on control & coordination for (autonomous) road and water vehicles, while networking with internationals to get alignment on common research interests.

The post-doctoral positions are available within the framework of two recently approved project: **“Cohesion Robotic Waterborne Structures & Logistics”** and **“Dynamic fleet management of autonomous vehicles”**.

1) **“Robotic Waterborne Structures & Logistics”**

Water makes up about 71% of the Earth’s surface. Approximately 18% of the surface of the Netherlands is covered by water. This represents a large real estate that is not used up to its fullest potential. Water canals are currently in use for recreation and for transport of goods. With growing congestion on the roads and on the streets of cities like Amsterdam, robotic waterborne structures could be used to enhance the transportation of goods and people. Teams of robotic vessels can also make vessel towing and transportation of large structures, such as windmills, more efficient and flexible. The impact of autonomous vessels on logistic performance needs to be investigated in order to determine most interesting business cases.

In this project we will start new joint research lines aimed at exploring the possible applications and methods needed to realize them. Synergies between the Departments of Maritime & Transport Technology, the Delft Center for Systems and Control, and other strong research groups will be benefitted from to prepare for upcoming (international) calls.

2) **“Dynamic fleet management of autonomous vehicles”**

Cooperative driving solutions for areas such as business parks, leisure sites, port areas, or event sites demand efficient management of fleets of cooperative vehicles. This project considers the challenges at the logistics and system level for organisations owning fleets of cooperative vehicles. This encompasses the entire spectrum of logistics systems: fleet size selection, vehicle rostering and assignment, dispatching, repositioning, and maintenance. The aim is to develop efficient methods that will enable the efficient deployment and operation of such fleets of cooperative (automated) vehicles.

This Post-doc position will take a methodological, distributed control perspective. Automatic coordination strategies and planning algorithms that will maximise the performance of fleets of vehicles themselves or as a system will be proposed and investigated. Autonomous learning algorithms, e.g. using (multi-agent) reinforcement learning, and how to integrate expert knowledge will be formally analysed. State-of-the-art logistic service simulators will be used to investigate the technical and logistic performance that could be realised with the new fleet management strategies. The value of integrating real-time maps with up-to-date transport system conditions (e.g. related to travel times) will then also be explored.

In case of interest in either of the above post-doc vacancies, mail resume, list of publications, motivation and questions to Dr. Rudy Negenborn (r.r.negenborn@tudelft.nl), Dept. of Maritime & Transport Technology, TU Delft, The Netherlands.