Postdoc: Privacy-preserving algorithms for robot motion planning

Published: yesterday  
Deadline: 10 Nov  
Location: Delft

JOB DESCRIPTION

Mobile robots can highly benefit our society. Highly automated vehicles will revolutionize the way we intend transportation. These vehicles can be used to make transportation more efficient and sustainable (for example, with platooning and ride sharing strategies). Vehicle to vehicle (V2V) communications will play a fundamental role in the development of efficient algorithms to coordinate these vehicles in our cities. This type of coordination, however, requires heterogeneous robots (from different owners) to share sensitive information. This information sharing might halt the use of these technologies due to privacy-related concerns.

This project aims to explore distributed privacy-preserving motion-planning strategies to allow different robots to agree on a coordination strategy without revealing sensitive information. The main challenge will be to develop a coordination algorithm for multi-robot systems that is distributed, privacy-preserving, and real-time.

REQUIREMENTS

We are looking for a candidate with a PhD degree in systems and control, robotics, computer science, applied mathematics, artificial intelligence, machine learning, or a related subject. The candidate must have strong analytical skills and must be able to work at the intersection of several research domains. Experience with real robot applications is a plus. The
applicant should have demonstrated ability to conduct high-quality research according to international standards, as demonstrated by publications in international, high-quality journals. A very good command of the English language is required, as well as excellent communication skills.

CONDITIONS OF EMPLOYMENT

**Fixed-term** contract: 1 year.

TU Delft offers a customisable compensation package, a discount for health insurance and sport memberships, and a monthly work costs contribution. Flexible work schedules can be arranged. An International Children’s Centre offers childcare and an international primary school. Dual Career Services offers support to accompanying partners. Salary and benefits are in accordance with the Collective Labour Agreement for Dutch Universities. TU Delft creates equal opportunities and encourages women to apply.

EMPLOYER

**Technische Universiteit Delft**

Delft University of Technology (TU Delft) is a multifaceted institution offering education and carrying out research in the technical sciences at an internationally recognised level. Education, research and design are strongly oriented towards applicability. TU Delft develops technologies for future generations, focusing on sustainability, safety and economic vitality. At TU Delft you will work in an environment where technical sciences and society converge. TU Delft comprises eight faculties, unique laboratories, research institutes and schools.
DEPARTMENT

Faculty Mechanical, Maritime and Materials Engineering

The faculty Mechanical, Maritime and Materials Engineering (3mE) trains committed engineering students, PhD candidates and post-doctoral researchers in groundbreaking scientific research in the fields of mechanical, maritime and materials engineering. 3mE is the epitome of a dynamic, innovative faculty, with a European scope that contributes demonstrable economic and social benefits.

The main focus of the Cognitive Robotics department is the development of intelligent robots and vehicles that will advance mobility, productivity and quality of life. Our mission is to bring robotic solutions to human-inhabited environments, focusing on research in the areas of machine perception, motion planning and control, machine learning, automatic control and physical interaction of intelligent machines with humans. We combine fundamental research with work on physical demonstrators in areas such as self-driving vehicles, collaborative industrial robots, mobile manipulators and haptic interfaces. Strong collaborations exist with cross-faculty institutes TU Delft Robotics Institute and TU Delft Transport Institute), our national robotic ecosystem (RoboValley, Holland Robotics) and international industry and academia. More information is available at http://www.cor.tudelft.nl/

ADDITIONAL INFORMATION

If you have specific questions about this position, please contact Dr. Laura Ferranti, email: L.Ferranti@tudelft.nl