The Delft Center for Systems and Control of the Delft University of Technology, The Netherlands, announces an open position for a Postdoc position (18 months) on the topic

**Automatic Generation of Control Software for Mechatronics Systems**

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**Department description**

The Delft Centre for Systems and Control (DCSC) coordinates the education and research activities in systems and control at Delft University of Technology. The Centre's research mission is to conduct fundamental research in systems dynamics and control, involving dynamic modelling, advanced control theory, optimization and signal analysis. The research is motivated by advanced technology development in mechatronics and microsystems, sustainable industrial processes, transportation and automotive systems, and physical imaging systems. The group actively participates in the Dutch Institute of Systems and Control (DISC).

**Job/project description**

This project is a part of a joint project between Delft University of Technology (Faculties of Mechanical Engineering and Aerospace Engineering) and University of Twente. The project is funded by SenterNovem within the IOP-IPCR (Innovative Research Program – Integrated Product Creation and Realization) program.

The design and development process of mechatronic products is multi-disciplinary and typically involves mechanical design, electronics design, control design and software development. Although each of these different design activities is supported by self-contained tools (such as Solidworks and Pro-Engineer for mechanical design and Matlab for control design), these tools are in principle independent and not integrated. Sometimes data transfer between these tools has to be manually done and a small change in mechanical design can be forgotten and is not reflected in control design. These situations can lead to longer product development time and software quality problems. To address these problems, this project aims to develop a set of tools and a framework to facilitate seamless integration among these tools, with which an interdisciplinary product development team can (almost) automatically generate control software for mechatronic systems.

The research subject of this particular Postdoc vacancy to develop a software framework to support the (semi-) automatic generation of control systems, based on a model and on requirements information. In particular, we aim at the development of tools with a much higher expressive power than what the current Matlab tools offer. The tools will integrate low-level control design with supervisory functionalities, such as system health monitoring, etc. The researcher will work in close collaboration with ASML, a company that produces wafer scanners, machines used in the semiconductor industry to expose patterns on silicon wafers. This requires positioning of the pattern and the wafer at sub nanometer accuracy. The design of the process control loops and the underlying software are essential for achieving this accuracy.
For a part of the project time the Postdoc will be co-located at the ASML facilities in Veldhoven.

**Requirement**

The candidate must hold a PhD degree in control systems or similar and must have excellent knowledge and skills in programming (Matlab, Simulink and C). Required are good communication skills in writing as well as oral, in English (knowledge of Dutch is not required). The starting date is as soon as possible.

**Conditions of employment**

The Post-Doc will be appointed for a period of 18 months. We offer the opportunity to do research that is both scientifically challenging, and has a higher societal and economical relevance. The researcher will work with other researchers in a multidisciplinary research group and will closely collaborate with the company ASML.

As an employee of the university you will receive a competitive salary 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.

**Information and application**

Additional information about the vacancy can be obtained from: prof.dr. Robert Babuska, tel. +31 15 278 5117, Delft University of Technology, DCSC, Mekelweg 2, NL-2628 CD Delft, the Netherlands.

Interested applicants should send their detailed curriculum vitae, a motivation letter explaining why the research topic interests you, a list of your publications, and the names and addresses of reference persons. to: Application-3mE@tudelft.nl or to Delft University of Technology, Ms. M. de Groot, Faculty 3mE, HR department, Mekelweg 2, 2628 CD, Delft, The Netherlands.

When applying for this position, make sure to mention vacancy number 3ME10-04.

The position stays open and applications can be submitted until a suitable candidate has been found.