

**Assistant Professor in the area of Soft Robotics: modelling and control, Eindhoven University of Technology, Netherlands.**

**Description**

In 2018, the 4TU.Federation has started research programs within the theme 'High Tech for a Sustainable Future'. With this she gives a strong impetus to research into sustainable technology. The Netherlands' four universities of technology (TU Delft, TU Eindhoven, University of Twente and Wageningen University) are making a significant impact on social challenges in the long term.

Within the programs, the four technical universities work closely together. In this context, the Eindhoven University of Technology has a vacancy for an assistant professor for the section Control Systems Technology in the area of soft robotics: modelling and control.

Robots that will daily operate in human environments, will need a 'soft touch'. The robots we know from industrial production, are extremely precise and fast, but very rigid as well. For physical and safe contact with people, or for handling vulnerable food products, they don't perform well. The '4TU Soft Robotics' program chooses a nature-inspired approach: the grip of a tree frog and the flexible arm of a cuttlefish. For this, knowledge of biology, fully new control systems and innovative robot design strategies go hand in hand. The partners of the technical universities strengthen each other in this.

Rigid industrial robots can physically harm working personnel and usual practice is to isolate the robots from people working around (ISO). At the same time there are a lot of tasks where the robots can support and assist the personnel in operations which cannot be solely performed by robots alone. Soft robots can be safely touched by people and impose far less potential hazards when interacting with people. This opens new horizons and poses new problems in design and control of soft robots aimed at interaction with people, keeping in mind that safety is the primal concern.

The flexibility of soft robots challenges its modelling and control: the models have to be quite accurate to mimic the flexible nature of the robots, and at the same time the model complexity can hamper the application of the control design methods; so to find a reasonable trade-off between the model accuracy and its applicability for control is one of the core research questions posed.

You will be embedded in a thriving national program that has been established to advance the emerging field of Soft robotics. You will be working in a team of top scientists and you will have the opportunity to carry out excellent research, set up and contribute to educational programs and work on concrete solutions within our broad network of partners in policy and practice.

We foster interdisciplinary collaboration between the six tenure trackers and the six postdoc positions to be appointed within this 4TU Soft Robotics program, and associated scientific staff, and public and private partners. All six Tenure trackers will be actively involved in the scientific, educational and valorisation activities of the 4TU Soft Robotics program. It offers prospective candidates excellent opportunities to extend their networks with academic and societal partners.

In the section Dynamics and Control research focuses on the modeling, analysis and control of mechanical systems in a broad sense. This encompasses typical areas as mechatronics, modern vehicle control and last but not least automation of mechanical systems. The latter subject is nowadays a key driver for research in robotics. Besides various more industrial robotic applications in industry and agriculture, an important field is formed by robots for care and for cure. Though very different in usage,

both directions have great potential for the future of mankind. A recent very relevant development in robotics for care and cure is framed as soft robotics where because of the very nature of a soft robot, human-robot interaction and safety is of primal importance.

## **Tasks**

As assistant professor soft robotics: modelling and control, you will fulfil the following activities:

- Perform scientific research
- Present results on international conferences and publish results in scientific journals
- Appear as a project leader in scientific research projects
- Contribute to the acquisition of research financing
- Supervise (a part of) the laboratory
- Contribute to the educational programme of the department

## **Job requirements**

We are looking for academically educated candidates in the field of mechanical engineering who require the following:

- With a PhD degree in mechanical/electrical engineering or related field with an established profile in (soft) robotics.
- Supplementary research competence in any of the following areas is also relevant: modelling of mechanical systems, including Finite Element Method, nonlinear control and numerical methods.
- Possession of good communication- as well as didactical skills
- Possession of good management skills in order to initialize new (inter)national research projects, appear as a project leader and appear as supervisor of (a part of) the laboratory
- The candidate is expected to play a leading role in research and research based education in collaboration with the existing staff of the Dynamics and Control group (TU/e) and colleagues from the 4TU program Soft Robotics.

## **Terms of employment**

- A challenging job in a dynamic and ambitious university with the autonomy to develop your own research line and participate in the curriculum of the department;
- A Tenure Track of five years with the prospect of becoming associate professor. After a maximum of 4 years the tenure decision will be made. If you have a more senior profile, you will receive a tailor-made career proposal.
- As an Irène Curie Fellow, you are entitled to a substantial start-up package to kick-off your career.
- In order to empower you, we provide support such as training programs for academic leadership and the university teaching qualification and a dedicated mentoring program to help you get to know the university and the Dutch (research) environment
- Salary and benefits are in accordance with the Collective Labour Agreement for Dutch Universities.
- Additionally, an annual holiday allowance of 8% of the yearly salary, plus a year-end allowance of 8.3% of the annual salary;
- A broad package of fringe benefits (including an excellent technical infrastructure, moving expenses, savings schemes).

- Family friendly initiatives are in place, such as the Dual Career Opportunity program to support accompanying partners, an international spouse program, and excellent on-campus children day care and sports facilities.

## **Information and application**

### **Information:**

More information can be obtained from the links: [tue.nl](http://tue.nl) and [tue.nl/en/research/research-groups/security-and-embedded-networked-systems-wi](http://tue.nl/en/research/research-groups/security-and-embedded-networked-systems-wi)

More information about this assistant professor position can be obtained from Prof.dr. H. Nijmeijer ([h.nijmeijer@tue.nl](mailto:h.nijmeijer@tue.nl), +31 40 2473203)

For information concerning employment conditions click here or contact A.P.C.J. Janssen., Recruiter Talent Acquisition Team ([a.p.c.j.janssen@tue.nl](mailto:a.p.c.j.janssen@tue.nl), +31 40 2476347)

### **Application:**

If you are interested in this position, you can only use the 'apply now'-button on this page.

Your application must contain the following documents:

- A motivation letter
- A detailed CV
- A detailed list of publications and achievements
- A research statement
- A teaching statement
- The contact information of two referees

We do not respond to applications that are sent to us in a different way.

Please keep in mind you can upload only 5 documents up to 2 MB each. If necessary please combine files.

Under European jurisdiction it is lawful to specifically recruit underrepresented groups. If no female candidate is found in the first six months of recruitment, this vacancy will be re-opened as a generic vacancy.

### **Visit**

[tue.nl](http://tue.nl)

[tue.nl/en/careers](http://tue.nl/en/careers)

### **Application**

Please upload your written application with letter of motivation, detailed curriculum vitae including photograph, transcripts of BSc and MSc degrees (with grades), and contact information of two potential referees, through the “apply now” button.

Acquisition regarding this vacancy is not appreciated. Applications can only be made directly via the TU/e website; applications that are made via other sites will not be considered.