

Dear colleague,

The IEEE Technical Committee for Micro/Nano Robotics and Automation presents a series of online seminars. One selected speaker will present cutting-edge research in the micro/nano robotics field. Join us Wednesday March 13th 2024 at 1:00pm UTC, for one hour. We will welcome: Prof. Cédric Clévy, Professor at Université de Franche Comte.

Please check full announcement enclosed or information below, and do not hesitate to forward it to your colleagues and/or students.

Looking to seeing you online,

Yours sincerely,

Aude Bolopion, on behalf of the co-chairs of the IEEE Technical Committee for Micro/Nano Robotics and Automation

**Title:** Pushing the limits of accuracy with tethered microrobotics: From assembling of hybrid nanophotonic circuits to characterizing of single plant fibers

**Abstract:** In this talk, I will first present our recent research progresses on studying original robotic measurement principles and strategies to enable accurately controlled tasks to be carried out for the characterization, manipulation and assembly of microscale (i.e. sub-mm size) objects. The proposed methods especially include hybrid force-position control and open up new horizons for the human operator, as they provide suited tools enabling locally touching or deforming matter in a controlled and versatile way, well beyond his/her own dexterity limits. Positioning accuracy as small as few nanometers along multi-Degree-of-Freedom can be obtained which opens new avenues for many application fields such as for the assembly of hybrid nanophotonic circuits or for the characterization of microscale objects such as plant fibers for bio-based composites. The second part of the talk will introduce novel processes enabling the development of sub-millimeter size tethered robots, i.e. robots that embed their actuation, to achieve robotic tasks still with accuracy but in ultra-confined spaces such as in-situ microscopes or for biomedical applications.

**Bio:** Cédric Clévy is a Professor at the University of Franche-Comté, Besançon, France. He is currently the deputy head of the AS2M (Automatic Control and MicroMechatronic Systems) department at the FEMTO-ST Institute. His research interests are the design, modeling and control of novel robotic architectures and systems based on smart materials for the characterization, manipulation and assembly at micro and nanoscales. He received 4 carriers' awards from the National Council of Universities in 2010, 2014, 2018 and 2023. He is currently serving as Senior Editor for IEEE/ASME Trans. On Mechatronics, Associate Editor for IEEE Trans. on Autom Science and Eng., is a member of several steering committees and is also an active member of the IEEE/RAS technical committee for "Micro/Nano Robotics and Automation".

**Lab website:** <https://www.femto-st.fr/fr/personnel-femto/cedricclevy>

**Link for the connection:**

<https://cnrs.zoom.us/j/92228846899?pwd=T20vcHVDSG5GeDJ4azhsMTZYNHUrZz09>