

26th International Conference & Exhibition - 8th-12th June 2026, Krakow, Poland

### Virtual laboratories enabling precision robotic systems

June 8th, 2026, 14:00-17:00 - Krakow, Poland - Room TBC

Workshop leads: Prof. Andreas Archenti, Assoc. Prof. Toru Kizaki and Asst. Prof. Saul Heredia

**Focus:** Digital twins, simulation environments and virtual laboratories for calibration, optimization, validation and collaborative use of precision robotic systems.

#### Program:

##### Part 1 (14:00 - 15:00)

Welcome and program introduction (Andreas Archenti, Toru Kizaki and Saul Heredia - workshop leads)

##### 1. Introduction to precision robotics and virtual laboratories

Speaker: Andreas Archenti, Toru Kizaki and Saul Heredia

##### 2. Demo introduction – participants experience teleoperation to Tokyo and Stockholm

Speaker: Saul Heredia (The University of Tokyo, Japan)

##### 3. Virtual laboratory demo: collaboration, object synchronization and multi-operator interaction

Speaker: Saul Heredia and Iley Alvarez Funcke

----- Coffee break (15:00 - 15:10) -----

##### Part 2 (15:10 - 17:00)

##### 4. Virtual Laboratory

Speaker: Saul Heredia (The University of Tokyo, Japan)

##### 5. Fundamentals of Precision Engineering linked to robotics

Speaker: Andreas Archenti (KTH Royal Institute of Technology, Sweden)

----- Coffee break (15:50 - 16:00) -----

##### 6. Precision Robotics

Speaker: Toru Kizaki (The University of Tokyo, Japan)

##### 7. Robotics control

Speaker: Iley Alvarez Funcke (KTH Royal Institute of Technology, Sweden)

##### 8. Uncertainty quantification

Speaker: Jihui Han (The University of Tokyo, Japan)

17:00 Summary and Closure (Andreas Archenti, Toru Kizaki and Saul Heredia)

**Intended audience:** academics, industry professionals and innovators in precision engineering, metrology, biomedical robotics and high-precision manufacturing.

**Learning outcomes:** understand precision and accuracy in contact robotics; identify calibration techniques; evaluate virtual laboratories and digital twins for validation and collaboration.

Presentations will focus on the workshop theme. Questions and comments are encouraged during each presentation.

