IEEE Future Directions Telepresence – Workshop on Telepresence for Space Exploration and Terrestrial Applications

Highlights from SMC 2025

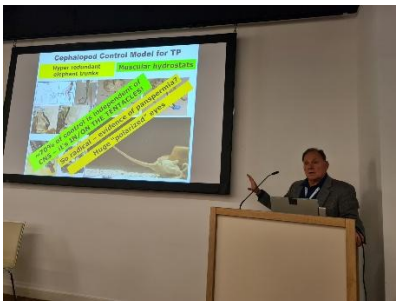
Ashitey Trebi-Ollennu, Adrian Stoica, and Neal Y. Lii, Workshop Co-Chairs

The IEEE Future Directions Telepresence – Workshop on Telepresence for Space Exploration and Terrestrial Applications was held on October 5, 2025 in Vienna, Austria as part of the annual Conference of the IEEE Systems, Man, and Cybernetics Society (SMC). The workshop was co-chaired by Ashitey Trebi-Ollennu (JPL), Adrian Stoica (IEEE SMC Society President), and Neal Y. Lii (DLR). The full-day event included six keynote presentations from

- Prof. Ryo Kurazume, Information Science and Electrical Engineering Kyushu University
- Dr. Yonas Teodros Tefera, Vicarios Lab in the Department of Advanced Robotics at the Italian Institute of Technology (IIT)
- Dr. John Blitch, Lieutenant Colonel, USA retired, Blitz Solutions LLC, formerly US Air Force Research Laboratory
- Dr. Seiko Piotr Yamaguchi, JAXA
- Dr. Thomas Hulin, DLR
- Dr. Harsimran Singh (DLR)

The keynote presentations covered a wide range of topics on terrestrial and space use cases. Starting from Earth, Prof. Kurazume presented *Skill Training Systems Using XR Technology*, and Dr. Blitch gave us an exhilarating view on *Telerobotic Rescue and Recovery***.** Bridging terrestrial to space, we explored together how to transfer *Mixed Reality-Based Remote Teleoperation* technology from their usage on Earth to space applications with Dr. Tefera. Looking toward space, we had exciting presentations on *JAXA's Vision on Robotics Assistance of Human Spaceflight* by Dr. Yamaguchi**,** and how to realize *Haptic Telepresence for Space* from DLR by Dr. Hulin and Dr. Singh.





Freshly following all these different perspectives from the keynote presentations, we moved to a *Telepresence Roadmapping Workshop* with our expert panel. Moderated by Mr. Tilo Wüsthoff of DLR, we dove deep several topics such as key technology drivers and upcoming known and still-undiscovered application areas that could drive Telepresence for the next two to three decades. Our aim is to analyze the inputs and discussions from this workshop session to help formulate a shared vision and roadmap for the community to help guide future research direction(s) in telepresence.