



# WORLD AUTOMATION CONGRESS

**WAC 2024**

**16th Bi-annual Congress**

**Playa Paraiso Riviera Maya, Mexico**



**Professor Dr. Fred Hadaegh, Ph.D., F-IEEE, F-AIAA**  
**California Institute of Technology**  
**Former, Chief Technologist, NASA JPL**  
**Pasadena, CA, USA**

**xxx Keynote No. xxx**  
**Date: September, xx, 2024**  
**Time: **xx-xx****

**Chair: TBN**

# *“From Autonomous Navigation of Flying Through the Saturn Rings to the Flight of 1000s of FemtoSats - Four Decades of Having Fun “*

## **ABSTRACT**

### **To come**

**Bio: Dr. Hadaegh** is a Research Professor of Aerospace at Caltech. He earned his Ph.D. in Electrical Engineering from the University of Southern California in 1984, after which he embarked on a career at the NASA Jet Propulsion Laboratory (JPL), NASA's lead center for robotic space exploration. Dr. Hadaegh held various technical and leadership positions at JPL for nearly four decades, including a member of the JPL senior leadership, of the Executive Council, and held the position of Chief Technologies until June of 2022. He was also the head of the Guidance and Control (G&C) Technology Program and the G&C Analysis and Group. In this capacity, he spearheaded cutting-edge research in guidance, estimation, and control theory while developing advanced algorithms and software for planetary science and astrophysics missions.

He developed Guidance and Control technologies for spacecraft formation flying, autonomous rendezvous, and docking, playing a crucial role in various NASA missions and Department of Defense programs. Dr. Hadaegh has been the Principal Investigator for numerous R&D programs, research tasks, and flight experiments. His primary research interests revolve around optimal estimation and robust control of dynamical systems, with a particular focus on autonomous distributed spacecraft systems.

Dr. Hadaegh has been recognized as a Technical Fellow and Senior Research Scientist at JPL and as a Life Fellow of the Institute of Electronics and Electrical Engineers (IEEE) and Fellow of the American Institute of Aeronautics and Astronautics (AIAA). His accolades include NASA's Exceptional Achievement and Exceptional Service Medals and JPL's Award of Excellence for "Flight Validation of Autonomous Rendezvous in Earth Orbit." Furthermore, he received AIAA's 2021 Mechanics and Control of Flight Award and the World Automation of Congress Award. His research contributions include mathematical modeling of uncertain systems, parameter

identifiability of dynamical systems, identification, and control of large space structures, and autonomous control of single and distributed spacecraft systems.