Abstract: This talk will center on emerging problems in aerospace engineering that pertain to autonomy and control of networked systems, and focus on three specific angles of my group’s research. First, I will discuss networked space systems, bringing out the perspective of “form and function” and highlighting the role of network structure for synchronization, coverage, formation flight and global broadband connectivity. Next, I will overview ongoing projects in my group in real-time computational guidance for Lunar and Martian autonomous pinpoint landing. Lastly, I will discuss our work on system synthesis using first-order methods and data-guided control, aimed at efficiently interfacing guidance and control, and expanding on outstanding problems at the intersection of control, optimization and learning. I will close with highlights of our efforts on space systems research, education and outreach at the University of Washington.

Bio: Mehran Mesbahi is the J. Ray Bowen Endowed Professor of Aeronautics and Astronautics, adjunct professor of electrical and computer engineering and mathematics, and executive director of the Joint Center for Aerospace Technology Innovation at the University of Washington. He is a fellow of IEEE and recipient of the NASA Space Act Award, University of Washington Distinguished Teaching Award and University of Washington College of Engineering Innovator Award. He is the co-author of the book “Graph Theoretic Methods in Multiagent Networks,” published by Princeton University Press. His research interests are distributed and networked space systems, autonomy, control theory and learning.