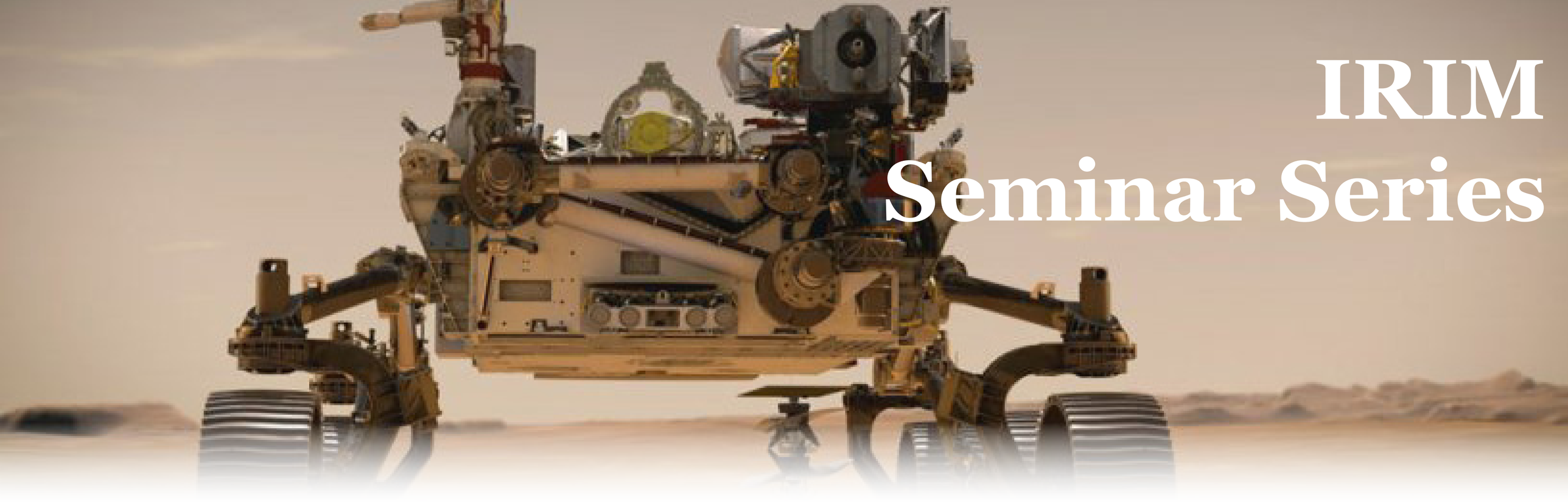

IRIM Seminar Series

To Boldly Go Where No Robots Have Gone Before: Solar System Exploration with Autonomous Robots

Hiro Ono | Group Leader; Robotic Surface Mobility Group (347F), JPL & Member; Mars 2020 Rover (M2020) Mission

May 18, 2022 | 12:00PM - 1:00PM

Marcus Building 1116

Abstract: After 60 years from the dawn of Solar System exploration with a number of glorious discoveries, we are exhausting easily accessible destinations. Future robotic missions are characterized by challenging, unknown environments (e.g., subsurface ocean of the icy moons of Jupiter/Saturn) and/or highly ambitious mission goals (e.g., >1,000 km autonomous driving on the Moon). A key enabler for such missions is autonomy. For example, the Perseverance rover, which landed on Mars in February 2021, has the most advanced autonomous driving capability ever flown to Mars, which is contributing to its challenging mission to discover the sign of life that may have existed on Mars in a distant past. JPL is currently developing a snake robot called EELS (Exobiology Extant Life Surveyor), which would descend into a vertical vent on Enceladus, a small icy moon of Saturn, to explore its subsurface ocean and search for extant extraterrestrial life. The environmental uncertainty, as well as the substantial light-time delay, would prevent us from operating EELS manually from Earth. This talk provides overview on the current research and development efforts on robotics autonomy at JPL, as well as an insight about the technology needs for future missions.

Bio: Hiro Ono is a Group Leader of the Robotic Surface Mobility Group (347F). As a member of the Mars 2020 Rover (M2020) Mission, he is supporting the tactical mobility operation. Previously, he developed M2020's autonomous driving algorithm and also led the landing site traversability analysis. He is also the PI of the JNEXT EELS project. His research interest is centered around the application of robotic autonomy to space exploration, with an emphasis on machine learning applications to perception, data interpretation, and decision making. Before joining JPL in 2013, he was an assistant professor at Keio University in Japan. He graduated from MIT with PhD in Aeronautics and Astronautics in 2012. Father of a 6-year-old princess. Go Red Sox and Hanshin Tigers.

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