Field Robotics Center Seminar Series

Tuesday, Jan 25, 2011 NSH 3305 11am - noon

Red Whittaker
University Professor
The Robotics Institute
Carnegie Mellon University

Landing the Lunar X-Prize

Abstract

Robots are transforming the future of the moon. Robot prospectors will find water, methane and metals. Robotic explorations will survey skylights, visit poles and map caves unseen from orbit. New enterprises are stretching beyond traditional government missions to deliver this future.

We are embarked to privately land and rove on the moon. The agendas of the first mission are exploration, science, engineering and to establish an enterprise. This is the first of serial robotic lunar missions.

Technical challenges of landing, excursion, communication and endurance are profound. Landing cannot utilize the aerodynamics of parachutes as on Mars, since the Moon has no atmosphere. Since destination and payload delivery matter, it is not enough to merely land....precision and hazard avoidance matter. For mission objectives and commercial viability, it is essential to traverse kilometers per day, rather than kilometers in years. Intermittent, low-bandwidth suffices for traditional scientific matters, since mission accomplishments and payback are a function of operational time. The moon's micrometeorites, ionizing radiation and...particularly...cold nights....are immense challenges to mission duration.

This presentation will discuss the why, what and how of robotic exploration in the New Age of the Moon.

Speaker Bio William "Red" Whittaker is the Fredkin professor at Carnegie Mellon's Robotics Institute. He is a member of the National Academy of Engineering and a fellow of the American Association for Artificial Intelligence. He served on the National Academy of Sciences Space Studies Board. Science Digest named Whittaker one of the top 100 U.S. innovators for his work in robotics. He has been recognized by Aviation Week & Space Technology and Design News magazines for outstanding achievement. Fortune named him a "Hero of U.S. Manufacturing". He received the Joseph Engelberger Award for outstanding achievement in robotics. He has developed dozens of robots, breaking new ground in autonomous vehicles, field robotics, space exploration, mining and agriculture. He developed the robots that cleaned up the Three-Mile Island nuclear accident. His ground vehicles have driven thousands of autonomous miles. Whittaker won DARPA's $2 million Urban Challenge. His HUMVEEs finished second and third in DARPA's Grand Challenge desert race. Whittaker is competing for the $20-million Google Lunar X Prize for privately landing a robot on the moon.

For more information, please contact:
Balajee Kannan, bkannan@ri.cmu.edu www.frc.ri.cmu.edu