The Center for In Situ Exploration and Sample Return (CISSR)
Speaker Series

presents

Speaker: Yang Cheng

Topic: Passive Imaging-Based Hazard Avoidance for Spacecraft Safe Landing

Date: Friday, February 1, 2002
Time: 10:30 a.m. - Noon
Location: JPL Bldg. 306-302

Abstract:

During planetary landing, safety is critical for mission success. Hazard avoidance is an approach to safe landing that guides the spacecraft to a benign landing site through onboard analysis of sensed data. In this talk, Yang Cheng will present a new and fast passive sensing-based hazard avoidance approach for spacecraft safe landing. This approach contains two important algorithms: a texture-based landing site selection algorithm and a landing site slope estimation algorithm. Using this new approach, a safe landing site can be selected in real time while the spacecraft is descending. Because the surface slope is a very important factor for safe landing and rover mobility, an error analysis of the slope estimation algorithm is given. Finally, he will discuss experimental results on real descent imagery.

Biography:

Yang Cheng is a senior research staff member in the Machine Vision Group (Sec. 3452). He earned his Ph.D. in remote sensing from the Geography Department of the University of South Carolina and was then a staff member at Oak Ridge National Laboratory. Since coming to JPL in 1999, he has worked on several space

robotic research projects, including Landmark-Based Small Body Navigation System, the Vision and Navigation Subsystem for the FIDO rover, and Passive Imaging-Based Spacecraft Safe Landing. Yang's research interests include robotic navigational autonomy, computer vision, remote sensing, cartography, map projection, geographic information systems, parallel computing, etc.

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