ICRA 2007 Workshop on Robotics in Challenging and Hazardous Environments



ABSTRACT:
In recent years, much progress has been made in the area of developing robotic systems for challenging and dangerous environments. Examples of such environments include rough terrain, air, water, space, planetary surfaces, surveillance and unstable or dynamic environments (for example, mines, search and rescue, hazardous cleanup). These environments present serious issues for research in autonomy, mobility, manipulation, sensing, hardware, computing, and electronics. Although humans are superior to robots due to their ability to think critically, their resilience in the face of unexpected situations, and their adaptation to new scenarios, it may be dangerous or impractical to send humans into these environments. As such, it is frequently more feasible to advance robot technology than to send humans. In other cases, when a human presence is necessary, it may significantly reduce risk to humans by developing a robotic system to serve cooperatively with humans. With or without a direct human presence, human assistance in these challenging environments is limited or impossible due to distance or the need for quick response to unknown or changing circumstances. This leads to high performance requirements and additional constraints on the physical hardware and software systems – which are still unsolved research areas.

Technologies that are developed for particular hazardous or challenging environments may often be equally suited for analogous environments. To understand current problems, in-development solutions, and potential methods that arise during operations in these challenging environments, this workshop will bring together researchers involved or interested in fielded robotic systems that operate in various challenging and hazardous environments. Researchers will explore issues and difficulties faced when fielding robotics in hazardous environments. Techniques that provide promising results to address these problems will also be discussed, including an overview of state-of-the-art technology for fielded robotic systems that address operations in unstructured environments. This workshop will provide a venue for researchers to bring together expertise and experience from different challenging environments and share approaches, ideas, solutions, and results. The primary focus of this workshop will be on physical systems in development or currently being tested or fielded.

Topics include: mechanical design, autonomous operations, sensing and data analysis, human-robot interaction, and operational systems in challenging environments.

ORGANIZERS:

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SUBMISSION PROCEDURE:

Submitted papers should be a maximum of 6 pages, following ICRA 2007 format instructions. Contributed papers should be sent to Ashley.W.Stroupe@jpl.nasa.gov with the subject "ICRA Workshop"

KEY DATES:

January 6, 2007: Initial submissions, 3-5 page paper.
January 10, 2007: Notification of participation.
January 20, 2007: Final submissions due.
April 10/14, 2007, Workshop (full-day)