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F-REI's Challenges for Harsh Environment

organized by

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Call for Papers

Outline of the Session

F-REI (The Fukushima institute for Research, Education and Innovation) is a newly established organization by the government for recovering nuclear disaster in Fukushima due to the huge earthquake in March 11th, 2011. One of the missions of F-REI is extensive research of robotics for the recovery of nuclear disaster including drones for disaster surveys, remote operation for fuel debris retrieval, swarm robotics working for the reactor, autonomous operation and so on. The aim of the session is both the introduction of such activities and the share of the current situation, because the motion control is clearly one of the key issues for future solutions.

There are three projects in the area of robotics running in F-REI. The projects will cover the development of highly mobile robots that are resistant to radiation, water, and heat; the conduct of intelligence research to realize autonomous control, swarm control, etc.; and the conduct of functional enhancement research to enhance the sensory functions of living organisms, etc. The results of these studies will be used to promote the development of highly mobile robots that can operate in harsh environments such as decommissioning, disasters, and outer space, the development of highly functional drones with high payloads that can fly for long hours, and the development of autonomous mobile robots.

The session will contain 4-6 papers related to the missions of F-REI. The organizer joined F-REI very recently and find that the recovery of nuclear disaster indeed needs the advanced motion control.

Topics of the Session

- 1 Sensors in hazard environment
- 2 Drones for disaster survey
- 3 Manipulation of fuel debris
- 4 Robotics in harsh environment
- 5 Remote manipulations with real haptics

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