World Robot Summit

Disaster Robotics Category
Tasks and Scoring (Draft)

World Robot Challenge program

Disaster Robotics Category

World Robot Challenge

〈Background〉

- Both natural and man-made disasters occur frequently around the world in recent years. Establishment of response robot technology will help prevent disasters, save lives in emergencies and support disaster recovery.
- Replacement by robots are required at industrial facilities like plants, and confined spaces such as tunnels and underground malls due to the difficulty in entering and extreme dangers once the accident happens.
- Aged infrastructures and buildings are likely to lead to serious damages in case of disasters such as earthquakes. It requires urgency to conduct inspections of the hard-to-reach area and promote efficiency of inspection and maintenance by introducing robots.
- In order to develop disaster robots effectively for responding in various disaster sites, it is important to set up STM to evaluate the common basis technology properly and to visualize the various performance of robots. STM grows in use internationally, so it is required to develop suitable STM for the issues in this field. (STM: Standard Test Method)

This category considers problem-solving in the areas of infrastructure, disaster prevention and response, and aims to achieve particularly difficult tasks such as plant disaster prevention and tunnel disaster response using robots.

Building robot-related consensus among people

The world first competition to deal with tunnel disaster

Challenges

Plant Disaster Prevention Challenge

Inspecting or maintaining infrastructures based on set standards (e.g. opening/closing valves).

Tunnel Disaster Response and Recovery Challenge

Collecting information and providing emergency response in case of a tunnel disaster (e.g. life-saving and removing obstacles from tunnels)

Standard Disaster Robotics Challenge

Assessing standard performance levels (e.g. mobility, sensing, information collection, wireless communication, remote control on-site deployment and durability, etc.) required in disaster prevention and responses

● **Needs in Disaster Prevention and Response:** To prevent plant disaster and respond to tunnel disaster in the places where humans cannot have access

● **Objective :** To achieve hard tasks in such places

● **Expected technological Element:** Integrated technologies (e.g. mobility, inspection and environmental recognition), on-site applicability and linkage with performance evaluation tests

* With regards to competition details in 2020, stated details are all present assumptions and the final details will be confirmed by referring to the progress of technology and the results of pre-competition which will be held in 2018.

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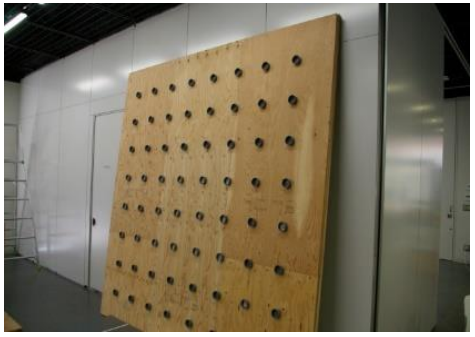
Standard Disaster Robotics Challenge

Task

- Task: Assessing standard performance levels (e.g. mobility, sensing, information collection, wireless communication, remote control on-site deployment, durability, etc.) required in disaster prevention and responses
- STM for Task: Standard performance test methods(STM) for infrastructure disaster prevention and response are developed here. These STMs are complementary to the current NIST STMs for USAR(Urban Search and Rescue) and EOD(Explosive Ordinance Disposal).
- Type of robot: Any
- Scoring： Practical level speed and accuracy.





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