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FROM THE GUEST EDITORS

Rescue Robotics Special Issue

Robots have saved humans from disaster in science fiction literature and films long before their existence was even practical. As a result, the field of robotics is expected to provide effective solutions to human disaster response. Investigations at the Kobe earthquake, in 1995, underscored the important subsidiary role robots could play in reconnaissance, communication, search, rescue, and medical care to increase the survival rate of victims and minimize the risk to human rescuers and firefighters.

In cases of nuclear plant accidents and large-scale fires, various robotic systems have been developed and arrayed. Some of them are at the practical level, but still need further research and development to enhance their applicable fields.

In the case of building collapses, research in robotic systems started with the Kobe earthquake in Japan, the Oklahoma City bombing in the United States, and the Izmit earthquake in Turkey.

Amid the terror of the World Trade Center on 11 September 2001, John Blich, Robin Murphy, and others applied search and rescue robots and found about 11 victims' bodies under the debris. This showed the potential effectiveness of robotic systems for disaster problems for almost the first time. Robots were the only solution for reconnaissance and search in the deep, collapsed structures. This event will be immortalized in the history of robotics. On the other hand, the state-of-the-art robotic solution is still primitive, and future technological advances are expected.

This special issue will inspire researchers in various robotics fields to start applying their technology and scientific power towards solutions for this socially important problem. The first article, "Be Prepared!" by Louise K. Comfort, explains the expectations for sociotechnical systems from the viewpoint of sociopolitics. The second article, "Snake Robots to the Rescue!" by Ismet Erkmen, et al., presents the R&D of serpentine robots applied to rubble piles. The third article, "USAR Competitions for Physically Situated Robots" by Koichi Osuka, et al., introduces USAR competitions that promote the development and social awareness of search and rescue robotics. The fourth article, "Working with Robots in Disasters" by Tomoichi Takahashi and Satoshi Tadokoro, proposes an agent approach for disaster response systems.

The editors hope that our efforts will assist in the creation of effective search and rescue technologies, and that, in the future, robotics will become indispensable fundamentals of social infrastructures for safety and security.

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