

RESCUE ROBOTS

- **Idea of Rescue Robots**
 - types of robots
 - advantages of robots
- **Examples of some robots**
 - Snakebot
 - Quince
- **Humanoid robots**
- **Conclusion**
 - past missions
 - limitations of robots

IDEA OF RESCUE ROBOTS

- tool for human rescuers
- semi-autonomous

TYPES OF ROBOTS

- unmanned air vehicles (UAV)
- unmanned underwater vehicles (UUV)
- unmanned ground vehicles (UGV)

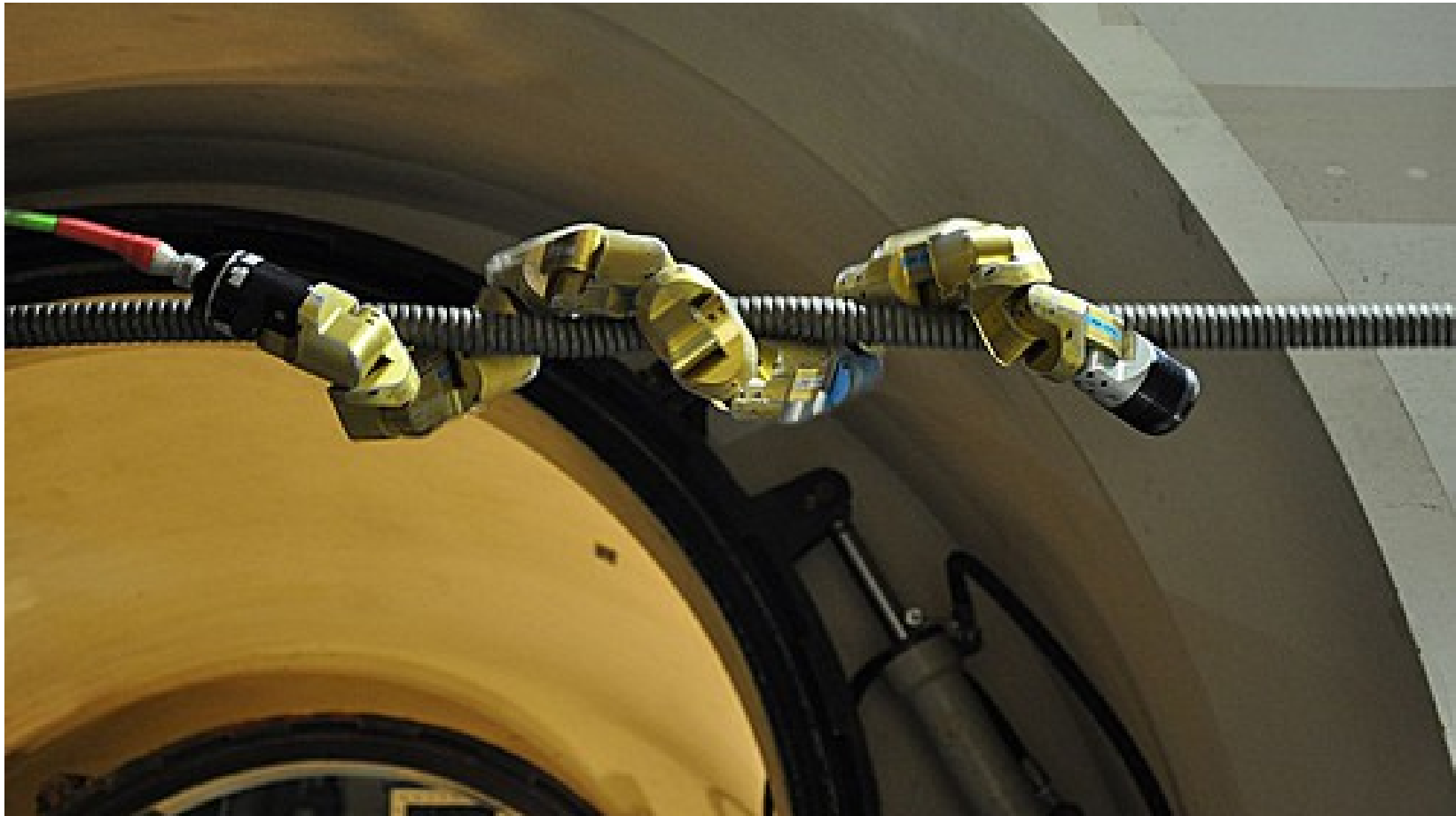
ADVANTAGES OF ROBOTS

- robust
- reliable
- no fatigue
- access to unreachable/hazardous areas

DEPLOYMENT



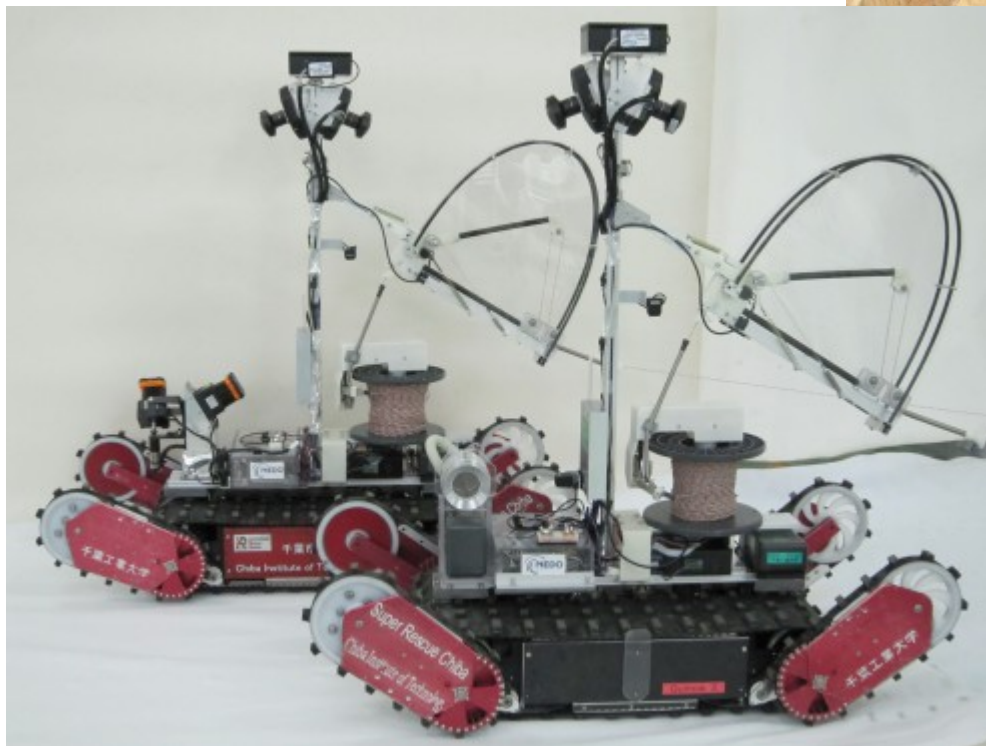
SNAKEBOT



QUINCE



photo: Wataru Umehara



WHY HUMANOID ROBOT ?



06.01.2013



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WHY THE DARPA ROBOTICS CHALLENGE TASKS?

The story of the DARPA Robotics Challenge (DRC) begins on March 12, 2011, the day after the Tohoku, Japan earthquake and tsunami struck the Fukushima-Daiichi nuclear power plant. On that day, a team of plant workers set out to enter the darkened reactor buildings and manually vent accumulated hydrogen to the atmosphere. Unfortunately, the vent team soon encountered the maximum level of radiation allowed for humans and had to turn back. In the days that followed, with the vents still closed, hydrogen built up in each of three reactor buildings, fueling explosions that extensively damaged the facility, contaminated the environment and drastically complicated stabilization and remediation of the site.

At Fukushima, having a robot with the ability to open valves to vent the reactor buildings might have made all the difference. But to open a valve, a robot first has to be able to get to it. The DRC tasks test some of the mobility, dexterity, manipulation and perception skills a robot needs to be effective in disaster response.



DARPA

ROBOTICS CHALLENGE 2013 TRIALS

#DARPADRC

PAST MISSIONS

- never found any survivors
- sensing has been the major barrier
- usually tethered

LIMITATIONS OF ROBOTS

- limited by their own skills
- small operation range
- operated by humans