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Assessment of the AAAI USAR Robotics Competition

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Overall Competition

I believe the following suggestions for the NIST rescue arena will contribute to the improvement of the course and realism of the competition:

- Lighting is never ideal in a disaster site. In order to simulate realistic lighting, drape the arena in a shade cloth (mounted high enough to block the overhead lighting but out of the way of spectators) then add in emergency lighting throughout the course. This way, the audience can still view the course during competition and competitors get a better feel for the odd lighting encountered during a disaster.
- Rescue teams most often enter the hot zone of a disaster site from the easiest and safest point of entry (the area with the least damage). The environment gets progressively more demolished/difficult as the team moves through it. The competition arena should also reflect this realism by uniting the three course sections into one. And have the entry point stationed at the easiest area. Multiple entry points will still need to be provided for purposes of judging and video taping. This will also keep the teams from going for easy high points, while not actually entering the difficult areas.
- Sheets (large slabs) of concrete are commonly found in a disaster site. Sheets of painted Styrofoam can be used to simulate concrete sheets. This would add to the realism of the course.
- A "Pass" device is specifically for a downed fireman. A looped tape of this device is not the best choice especially if firemen are present.

Individual Competitors

INEEL – (Best User Interface)

The user interface was Great overall. It could be enhance by the use of a mapping program such as Georgia Tech's. I would also suggest a joystick control with more resistance to permit more gradual movements. Also, if tactile feedback (barrier contact, resistance, etc.) could be provided through the joystick it would enhance navigation.

Georgia Tech – (Best Mapping)

The mapping software/hardware was outstanding. It almost compensated for the minimal user interface. If the mapping were combined with a user interface such as INEEL's, it would be outstanding.

Young Scholars Club – (Best robot design)

I thought the design of the YSC robots while in prototype form was the most likely to have use in real life scenarios. The suggestions I have for improving it are as follows:

- Reduce the overall size to improve access to confined areas
- Combine the design of the two robots (Place four small track drive units on bogies in place of the wheels)
- Place the high camera on a hinged mount to enable it to be lowered for clearance.