Rules Discussion Notes (2010)

Attendance:

30 international team representatives
20 Thailand team representatives

Technical Committee

	Satoshi Tadokoro, Tohoku University, Japan	(Trustee 2007-2010)
√	Adam Jacoff, Nat'l Inst. of Standards and Technology, USA	(Trustee 2009-2012)
√	Andreas Birk, International University Bremen, Germany	(Exec 2007-2010)
√	Ehsan Mihankhah, K.N. Toosi University of Technology, Iran	(Exec 2008-2011)
√	Tetsuya Kimura, Nagaoka Univ. of Technology, Japan	(Exec 2009-2012)
	Johannes Pellenz, University of Koblenz-Landau, Germany	(TC 2007-2010)
√	Jackrit Suthakorn, Mahidol University, Thailand	(TC 2008-2011)
	Michael Hofbaur, Technische Universität Graz, Austria	(TC 2009-2012)
	Ikuko Tanimura, International Rescue Systems, Japan	(League Administrator)
	Ann Virts, National Institute of Standards and Technology, USA	(League Administrator)
	Michael Lau, Singapore	(Local Chair 2010)

League Policy:

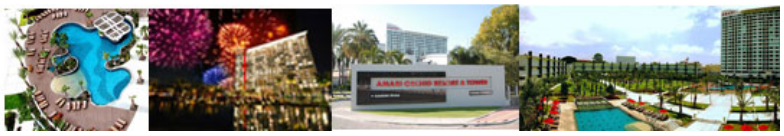
The league's executive committee generally represents the regional competitions (typically the chairs) to maintain diversity, while considering contributions to the league in the past and moving toward future goals.

- TRUSTEES are appointed by the Trustees to a 3 year term.
- EXECUTIVES are appointed by the Trustees to a 3 year term, with 1 position replaced each year.
- TECHNICAL COMMITTEE is elected by league for a 3 year term, with 1 position replaced each year.

International Rescue Robot Workshop 2009

Amari Orchid Resort & Tower, Pattaya

11-14 December 2009,



Rules Update/Discussion

Apparatus Ideas:

Robot Size/Weight Limits (???)

- Implement strict initial size limit to encourage shape changes to surmount existing obstacles?
- Implement strict initial weight limit to encourage single person carry implementations, or even carry up ladders?
- Reduce guaranteed access widths and heights to 75cm.
- Start/Entry via vertical insertion through 60cm triangle?

Stairs (45 degree)

- (Agreed) Introduce obstacles onto stairs to encourage steering on stairs. Initally a single side with 80cm access path but move toward slalom of obstacles on stairs.
- (Agreed) Put one 30 degree stair element with closed risers (for sensors) in the Yellow arena for autonomous robots.
- (Agreed) Introduce a spiral stair element for pitch and yaw combined traversal.
- (Agreed) Introduce different stair surface (wood, steel, carpet).

Pipe Steps (20cm and 30cm)

- (Agreed) Increase to 30 cm (three pipes) in at least one position, probably two
- (Agreed) Similar test with no landing on the far side.

Ramp (45 degree)

- (Agreed) Maintain slope but put two known friction values (carpet like, and test method like) to be consistent across competitions (and the standard test method).
- (Agreed) Force a diagonal ascent/descent to challenge roll-over issues and steering on slopes (implement on at least one ramp to provide shortcut to elevated surface).
- (Agreed) Maintain one conventional and make one aggressive.
- (Agreed) Same minimum path of 80cm with obstacles.

Flooring

- (Working) Introduce unstable flooring with a small shifting collapse ramp element if not deftly traversed (hinged supporting 4x4 posts under ramp). The idea of introducing dynamic obstacles to encourage controlled, smooth mobility behaviors is agreed. But the apparatus should not simple penalize weight alone. But good use of flippers to get over obstacles, like the tops of stairs and such. So regional chairs will implement prototype collapsible apparatuses at regional opens to see what might work.
- (Agreed) Passive rollers with some damping in one direction to replace any given ramp flooring element but without just forcing robots into walls. This concept basically replaces paper on the floor and may be more deterministic. (All regional opens will experiment with purchasing conveyor rollers and building a prototype).
- (Working) Conveyer belt to replace a ramp element to simulate crossing water or to simply challenge getting onto the stairs quickly and reliably (a prototype will be developed at the Iranian Open)

Radio Drop-out Zone

- (Agreed) Stabilize the difficulty of flooring to Orange crossing ramps, and maintain the entrance from the Orange arena.
- (Agreed) When running it as a dead end (like when concurrent arenas are operating) the benefit is the conventional 1 victim per autonomous traverse each way.
- (Agreed) The arena may also be setup to have the radio drop zone be a "shortcut" to the other side of the arena (similar to the Black arena shortcut), in which case no bonus victim is possible but there are many more victims already there to find in the other Orange arena. One should be relatively near the entrance.

Mapping

- (Agreed) Add "mapping fiducial" barrels throughout the arenas (full, half, and ¼-3/4 cuts). May also add hazmat labels throughout the arenas in known locations to report as well for accuracy. Barrels are also good for victim locations search from above with long arms and aerials.
- (Agreed) Encourage map merging for any multi-robot teams.
    - If the team hands in 1 map, they can score up to 20 mapping points per victim on that map.
    - If the team must hand in more than one map, teams may get a maximum of 5 points per victim.

This allows handing in of per victim maps to get higher-quality maps handed in before being self-destroyed.

- (Agreed) Limit map generation interactions to allow only a single key stroke or mouse click to identify that the operator wants to "map" the victim location or "resume" without mapping the victim location. Operator placement of victim locations onto maps, by reading the map and placing a pointer or other means, is no longer available.

Simulated victims

- (Agreed) Use barrels open to top to contain simulated victims to challenge reach for ground robots and low hover, visual acuity, and thermal payloads for aerials.

Arena General:

- (Agreed) Challenge mapping by adding wall clutter/texture that varies with elevation, diagonal pipes, high frequency breakup of linear walls with crumpled paper or other.
- (Agreed) Challenge mapping by adding chainlink fence, windows, mirrors, absorptive black felt.

Rules:

- xxxx
- xxxx

AERIAL COMPETITION

Call for Participation

RoboCup Rescue Unmanned Aerial Vehicles (UAV) Competition

Singapore, 21-24 June 2010

Unmanned Aerial Vehicles (UAV) have a great potential for assisting in safety, security, and rescue missions. They can for example provide an "eye in the sky" overview to guide operations or search and locate victims and other targets of interest at locations that are hard to reach on the ground. A typical application example is a building collapse, where it is dangerous for humans to access the rubble pile for search, respectively where decisions about prioritization of the usage of heavy equipment have to be taken in an efficient manner.

The RoboCup Rescue UAV Competition builds upon the standard RoboCup Rescue test arena (http://robotarenas.nist.gov/) where simulated victims have to found and information about their status has to be gathered. Ideally, the victim data should be complemented by the victim's positions indicated in a map generated by the robot during the mission.

The RoboCup Rescue UAV Competition features different levels of difficulty to accommodate as many teams as possible that are interested in participating.

First of all, three modes of operation are allowed, namely eyes-on, remote, and autonomous. In eyes-on mode, the operator can steer the UAV under line of sight conditions, i.e., the standard conditions for flying an RC device. Remote tele-operation requires the operator to be in a special booth preventing line of sight, i.e., onboard sensors have to be used by the operator for the control of the UAV. Autonomous handling of tasks or sub-tasks will require complete hands-off operations. The three different modes will receive different weights in scoring.

Furthermore, the tasks in the competition differ with respect to the maneuverability of the UAV. The default tasks for the search of victims take place in clear airspace, i.e., the UAV can fly over the arena without any obstacles being present at this elevation level. More advanced missions involve getting relatively

close to victims to get more information about their state. In addition to advanced low level control capabilities, this may include the demonstration of intelligent autonomous functions like station keeping, e.g., autonomously hovering over a target once it has been (manually) found, or path following based on a visually marked trail. For fully autonomous exploration in the clear airspace over the arena, artificial visual markers can be provided to facilitate the machine detection of locations of interest.

Groups interested in participating in the event should send an email to GOOGLE_MAILING_LIST(???) by DATE.

Competition Administration Guidelines:

- Finals missions should be long enough to allow “short cut” through the radio dropout zone to contribute to finding several victims on opposite side of the arena. Twenty minutes may be a minimum for a full size arena.