

ROBOTICS AND ARTIFICIAL INTELLIGENCE FOUNDATION (RAAIF)

MARS ROVER – PROBLEM STATEMENT

Introduction:

“We may discover resources on the moon or Mars that will boggle the imagination that will test our limits to dream”

- George W. Bush



Humans are meant to explore new things. Curiosity is the root cause for exploration. We don't wonder about things. We just make it reality!!

Have you ever imagined about space and moon and thought about the presence of life in it. If 'yes', you are equal to scientist. Research about exploring space is a great challenge. Robots are built and tested on a large scale to inspect space and moon. Here is your chance to exhibit the same to the world. So, start exploring by building robots.

Problem statement

- Build a robot which can inspect on multi-terrain surfaces against the challenges in its way.

- The Rover will be starting from a space shuttle and exploring its way down on the space. The rover should be capable of exploring the surface parameters and detect the humidity content, temperature in air and the presence of water in the localized region such as a cave. The rover should send all the details to the display from the space station by means of wireless communication.
- Finally the rover should collect a sample of sand from the moon zone to cave and measure the humidity and temperature of the cave and rover should reaches the space shuttle.

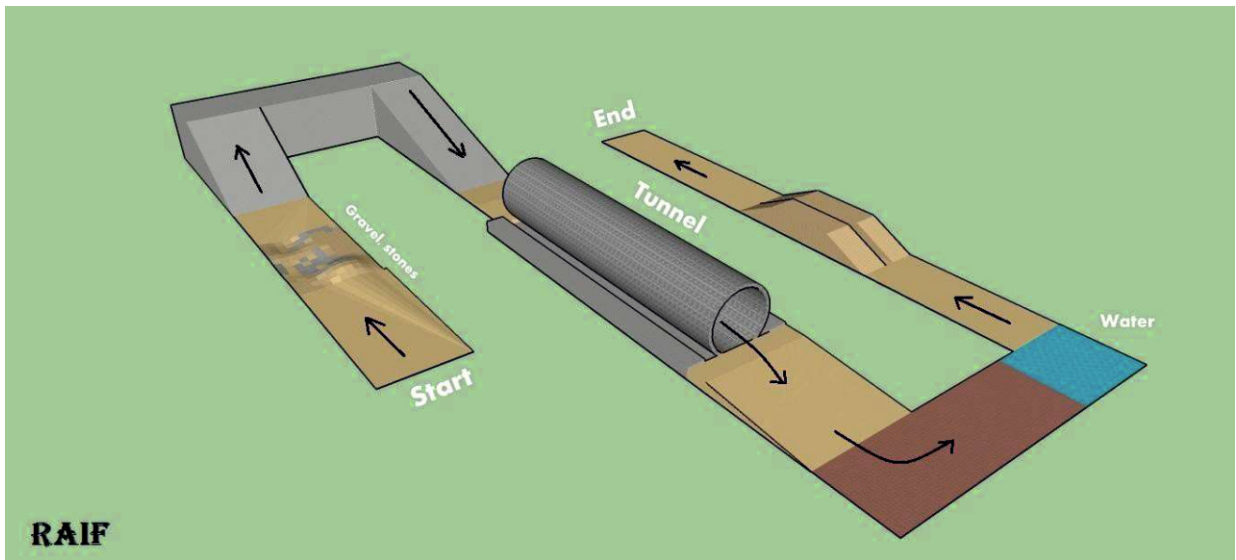
Event format

The event consists of two rounds.

Round 1

- The round 1 will be the qualifier.
- The teams will be given 1 trial to check the rover before challenge starts.
- The task of the robot is to move over the uneven surface (which includes inclinations, slopes, rough terrains etc.) from a starting point to the ending point with a minimal amount of time and with a good stability.
- BFS (Built from scratch) and RMK (ready-made kits) can participate. All brands of kits can compete in the Robotz Games Categories.
- Points will be deducted for falling down from the inclination in the arena.
- Those bots which complete the task in the minimal amount of time will be qualified for the next round.
- If the bot falls at a point on inclination, it should start again at a specific check points provided. The checkpoints will be introduced during the occurrence of the event.
- The bots can be wired or wireless controlled. The rover can be autonomous too.
- Usage of ready-made transmitter and receiver for controlling is allowed.
- Judges decision will be the final.

Schematic model of Arena: (Arena may be changed)



>The best teams will be selected for the finals<

Round 2

- The round 2 will be the finals.
- Bot has to be capable of exploring an environment on space surface which is equipped with sensors to detect the humidity, temperature in air and the presence of water in the cave. The rover should be capable of picking a sample of sand placed in the cave.
- The rover should display the acquired data to the display provided outside the Space zone. i.e. A wireless data transmission should be enabled.
- The team should control the bot manually by means of wireless communication or autonomous function can be enabled. No wired communication is allowed.
- The Space zone will be of uneven surface with bumps, slopes and obstacles on its way. The rover should clear of the obstacles to lead its way forward.
- BFS (Built from scratch) and RMK (ready-made kits) can participate. All brands of kits can compete in Robotzindia V8.0
- Data from the rover should be sent by means of wireless protocol communication to the computer at a distance.

- The bots which has high level of accuracy in displaying the parameters of the cave, will add to additional credits to you.
- The cave will be transparent for controlling the robot.
- The game will be ended after 10 minutes.
- Autonomous robots will gain extra value.

Rules and specification

- The rover should fit into a box of dimension 30x30x30cm.
- A team should consist of 5 members only and should have a valid Id- card.
- The rover can extend in any direction after the competition begins.
- The weight of the rover should not exceed 6kg.
- The battery for the robot should be on-board and no external source should be used. The bot should not exceed 24v
- No part of the robot must damage the arena, violation of this could lead to disqualification.
- Team should have a “Team name” (a unique name to be validated from the robotzindia.com site),
- A team should have a leader or a spokesperson to interact with media, RAAIF and other audience.
- Bring cleaning equipments to clean any spills on the arena / stage.
- Any form of changes in connections should be done after consulting to the Robotzindia coordinator.
- Unfair arguments regarding the non-functionality of sensors or improper wire-less communication will not be appreciated.
- Judges decision will be the final.