RoboFashion & Dance (RFD) 2012 (v1.0 Official Version, 12-2-11)

Robotics in education creates an innovative and stimulating classroom environment, in which students have fun, are excited, and are motivated to learn math, science, engineering and technology (STEM). Robotics transforms imagination into reality. Robotics can also connect classroom lessons to real-world environment. The RoboFashion & Dance category has been created in order to promote imagination, creativity, harmony, collaboration, technological arts, and beauty. As a result, it will get more students interested in STEM area at an early age.

RoboFashion & Dance (RFD) Challenge

A team of robots (two or more are recommended) will use a stage that does not have walls to show off their costume, walk (drive), and performance to music. Teams have around 2-4 minutes to demonstrate their robots to music that is appropriate for young students. Robots may start from any area and may finish at any location. Robots may follow the edge of the boards and do not need to follow the lines, especially on the table area. Team members are supposed to interact together with their robots while sending various signals to the robot for synchronizing the dance.

2"x4"
Aluminum foil
tape

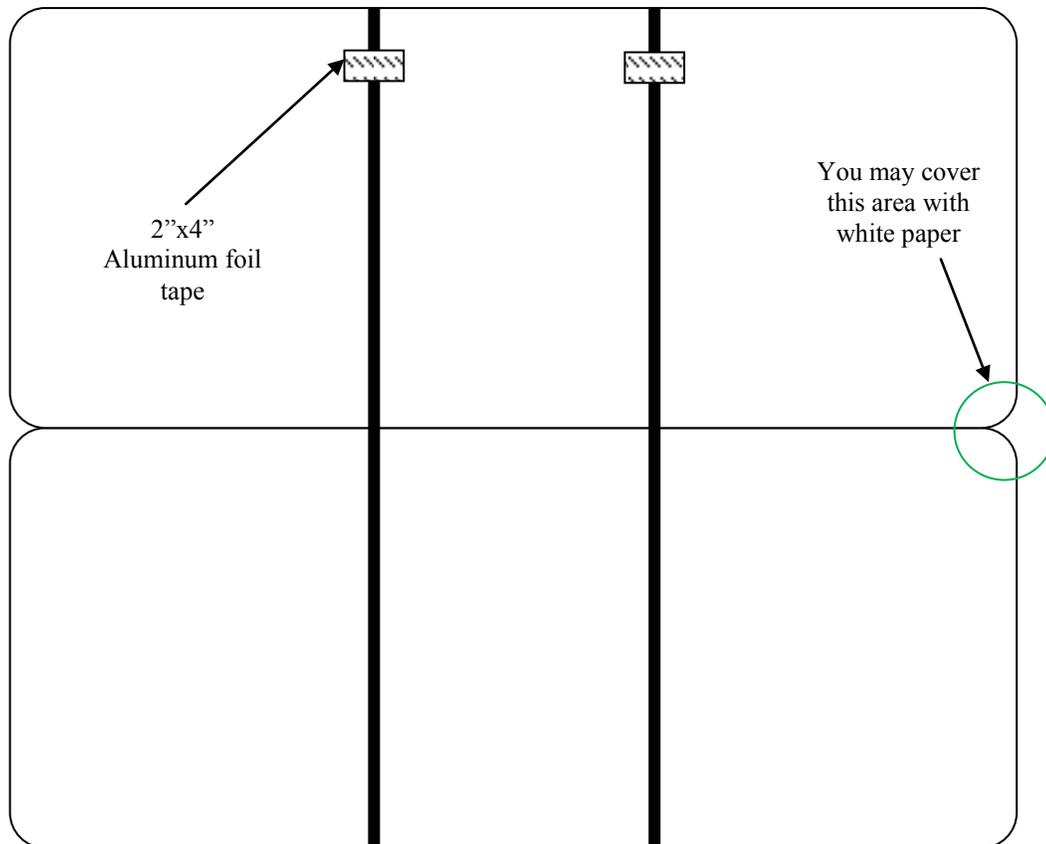You may cover
this area with
white paper

Figure 1. A sample *suggested* (not required) stage floor. You may design your own stage

The design of the stage:
- It must be made of one or two 30"x72" plastic folding tables (light, almond, surface color, not necessarily white). For example: http://www.buylifetime.com/Products/BLT/PID-22901.aspx
- The team is responsible for bringing its own stage or contacting the Qualifying, Regional, or World Championship organizer prior to the event.
- Teams can create any shape using two tables. See a sample stage in figure 1 above
- Teams can use any material such as paper, black tape, aluminum foil tape, etc to create land marks for the robot on the tables.
- You may place some objects on the table; however, walls are not allowed.
- The tables can be placed on 10.5" high crates or a dark colored floor.

RFD simulates human fashion s. As a reference for ideas, a bridal fashion show video can be found at http://video.google.com/videoplay?docid=3504599566833590400&q=fashion+

RFD with a story (Robo Skit) is welcome. Teams can use microphones during the show.

Robots specifications

- Number of robots per team: two or more robots are strongly recommended
- Robot type: any, as long as fully autonomous (no remote control is allowed)
- Dead-reckoning is discouraged. Feedback loop control using sensors is required
- Interaction and communication (Bluetooth or ZigBee) between robots are strongly encouraged
- Robots may not be touched after they are started. If touched due to malfunctions of the robots, points will be deducted by judges. Human players, however, are encouraged to use voice, sound, claps, and/or hand signals for the ultra sonic sensor or camera, or visible light such flash light to signal robots.
- Legged robots are welcome
- Any programming language can be used
- Number and types of robot controllers, sensors, motors, or parts: unlimited
- Robot shape: human, animal-like with arms, tail, or any creative costumes
- No limitation on size (width, length, height) or weight

Robot programming requirements

- Each robot will need a reliable program to move and dance on the table(s)
- The lighting condition of the stage is static but unknown until the day of the competition
- If a team has multiple robots, there must be a method to work together. This includes the ability to detect a member robot in front, stop, and then be able to automatically restart.
- Each robot should cover the whole stage to achieve the best score. This means each robot needs to visit every corner of the table.

Judging

Each team is given a chance to introduce the team members and robots to the audience using the general Robofest rule. Just like the judging of figure staking, a panel of judges will decide winners using various criteria such as robot design, decoration of the robots, costumes, completeness (covering the whole stage or not), reliability (human help or not), *the application of math and science concepts learned*, technological merit, creativity, artistic choreography and performance **of Robots (not human players)**, communication with robots, robot to robot interaction, interaction with human players, synchronization, harmony, team work, etc. Judging form is available on the web.

Team registration

- Go to www.robofest.net and click on "2012 Competition" Button
- Maximum 7 members per team
- **4**th – 8th grade students
- Each team must bring everything needed for the , including a computer (laptop) for programming changes, electrical cords, music file, music player, stage tables, etc.