

14th Annual Robofest[®] 2013 Rules

1-15-12 v1.1 Official Version (Changes after Kick-off version are in red.)



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<http://www.robofest.net/2013/ageWaiverForm13.docx>
- Video Qualifier Submission Form
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Part 1 – Robofest 2013 General Rules

Robofest® is an annual robotics competition designed to promote and support STEM (Science, Engineering, Technology and Math) and Computer Science education through autonomous robotics. Robofest is an open competition, allowing teams to use any type of robotics platform and any programming language for the categories shown in Table 1.

Competition Category(*1)	Age (grade) Divisions	Team Size	Platform	Unknown factor	Assessment	Reg. fee(*3)	Note
Game – RoboSRCC	Jr. (5-8 th) & Sr. (9-12 th)	Max. 7	Any	Yes(*2)	Yes	\$50	Each team uses a fully autonomous robot to play this year’s game, RoboSRCC. See Part 2.
Exhibition(*4)	Jr. & Sr.	Max. 7	Any	No	Yes	\$50	Each team has complete freedom to show off any creative autonomous robotics project. See Part 3.

(*1) World Championship will be held on May 18, 2013 at Lawrence Tech, Southfield, Michigan

(*2) Problems or parameters unveiled on the day of competition

(*3) Per team. No refunds will be given; some qualifying sites may charge \$20 ~ \$25 Check-in fee; Sites outside North America may have different fee schedules.

(*4) Fashion Show or Dance can be a part of Exhibition. There is no independent RoboFashion & Dance in 2013

Table 1. Robofest 2013 Competition Categories

Robofest also provides the following associate competitions that will be held during World Championship and/or IGVC on June 8-10, 2013 at Oakland University, Rochester, Michigan.

Competition Category	Age Divisions	Team Size	Platform	Unknown factor	Reg. fee per team	Note
Vision Centric Robot Challenge (VCRC)	Sr. (9-12 th)	Max. 3	Any vision based robot	Partially unknown	\$50	For Talented high school and college students. See Part 4. Competitions will be held at World Championship and IGVC
	College	Max. 2	Any vision based robot	Partially unknown	\$50	
Bottle RoboSumo (aka RoboShove)	Jr. & Sr.	Max. 3	Any	Partially unknown	\$50	IGVC only.

Table 2. Robofest 2013 Associate Competition Categories

1 General Team Rules

A. Team Formation

- Any organization, such as a school, home school, civic organization, club, etc. can form teams.
- Age divisions and grade levels for each competition category are indicated in the tables 1 and 2. Grade levels denote the student’s grade as of April 2013.
- For any exceptions in a student’s age or grade, the coach must submit an “*Age Division Waiver Request Form*” to Robofest administration for approval. The general rule is that playing up is fine as long as the student has exceptional talent in construction of the robot *and* computer programming, and has the maturity to work with other team members. Playing down is discouraged in general. The reason to request playing down must be specified on the form. For either playing up or playing down, coaches should obtain consent from their entire team and their parents.
- A team member may join multiple teams *in other competitions, not the same category*. For example, a student can join a game team and an exhibition team. When a coach has multiple game teams, a student can join only one game team.

B. Team Registration

- Teams are registered by a registered coach; a coach may have multiple teams using same coach ID #.

2. Team registration is processed on the web at <http://www.robofest.net>. See Part 1, Section 3 “Registration Process” for a detailed description of the registration steps.
3. The registration deadline is **3 weeks** before the competition date at each site. If a competition category at a site does not have 5 teams or more, teams registered at the site *may* be asked to move to another site; or teams can enter via video submission. (See Part 1, Section 8)
4. There may be a \$20 ~ \$25 check-in fee at a qualifying competition site, which will be used solely by the competition host site. Each qualifying site web page specifies the fee amount under the “check-in fee” section.

2 Team Coach Rules

A. Coach Qualifications and Roles

1. Coaches must be adults without any criminal record.
2. The coach must have a valid email address and must check the email account periodically. Email is the primary and official communication method between the team and the Robofest organizer. If a coach’s email address is changed, it is the coach’s responsibility to update the Robofest registration system by logging into the coach’s Robofest account. To confirm an email address change, the system will send the coach a confirmation email. The coach will need to confirm by clicking on a link in the confirmation email.
3. Robofest 2013 has multiple qualifying competition sites. A coach using a single coach ID may register different teams for multiple qualifying sites.
4. The coach is responsible for entering and updating team information by the update deadline **10** days before the competition. Note that team members’ personalized certificates will be printed based on the information the coach enters on the website. Robofest will not reprint certificates for free due to incorrectly entered information.
5. Team coaches must coordinate pre- and post-assessments online to help Robofest administration gather data regarding students’ learning of STEM subjects.

B. Coaching Teams

1. Coaches and adult volunteers must not directly work on their team’s robot(s). They should teach and/or provide necessary training for the team to solve the challenge problems by themselves.
2. We recommend that coaches recruit technical mentors or assistant coaches if necessary. Coaches are encouraged to contact local IEEE chapters (Robofest medal sponsor), ACM chapters, engineers’ societies, robotics clubs, tech companies, or universities to find volunteer technical mentors.
3. Robofest provides some technical workshops at LTU and/or online. There are books, multimedia curriculum, and other online resources available as well.
4. The team coach is responsible for facilitating, transporting, and overseeing team members for team meetings and at Robofest competitions.

C. Sponsorships / Consent & Media Release Form

1. Another important role of the coach is to find sponsors for their team(s). Team sponsors are individuals, groups, companies or other organizations that donate cash, products, or in-kind services to the team. The Robofest website will list up to four team sponsors per team on the web.
2. Robofest attracts media attention. Coaches must collect *Consent & Release Forms* not only for students, but also for the coach him/herself and team volunteers. These paper forms must be submitted by a coach to the hosting site during check-in. Note that the form requires parent signature.
3. Before and after Robofest, please contact newspapers, radio, and TV stations to recognize your teams’ efforts and achievements. Let Robofest administration (robofest@LTU.edu) know if your teams were featured in any media outlets.

3 Registration Process – Six Steps (See Figure 1 on next page for summary)

- Step 1. **Coach Registration** form can be found on the web at www.robofest.net . After the registration form is submitted, a coach ID and password will immediately be sent to the coach by email from *do-not-reply@robofest.net*. COACH REGISTRATION IS CONFIRMED BY CLICKING A LINK IN THE EMAIL CONFIRMATION SENT TO YOU. If you do not receive the confirmation email, contact robofestoffice@gmail.com or 248-204-3568 to resolve the problem. An incorrect email address in the coach registration form may be the cause. Please check your spam folder, before contacting us. Veteran

Robofest (2003 ~ 2012) coaches are encouraged to use their prior coach ID and password. If you forgot your password, click on the "Forgot Password" link. If you forgot your coach ID number, visit prior Robofest pages or contact robofestoffice@gmail.com or 248-204-3568.

- Step 2. **Team Registration** will begin immediately after the Kick-Off Meeting on December 5, 2012. Using the coach ID and password, the coach can create teams after selecting a qualifying site. During this step, the coach must accept the Robofest 2013 Coach's Pledge (Appendix 1). All the team member names, grades, and gender must be entered. Student contact information is not made public. Exhibition teams must enter a short project description in this step including the theme of the exhibition, functionalities of the robots, the number and types of sensors and motors used, and any other information that describes the exhibition. Please register early, since a competition division of a site will be closed when the number of teams registered is equal to the maximum capacity for the division.
- Step 3. **Registration Fee Payment**: After creating all of your teams, pay the registration fee online using a major credit card through PayPal. A PayPal account is NOT required. You will receive a payment confirmation email from PayPal, which can be used as a receipt. Or, you may choose the option to send a check payable to LTU Robofest to: **LTU Robofest, 21000 West 10 Mile Rd., Southfield, MI 48075, USA**. Make sure to **WRITE THE TEAM NUMBER(S) IN THE MEMO LINE OF THE CHECK AND INCLUDE A HARD COPY OF THE PAYMENT PAGE FROM THE WEB WHEN YOU MAIL THE CHECK**. Your team registration will be complete once LTU receives the check.
- Step 4. **Consent & Release Form**: Print the Consent & Release form and send it to students' parents. Get the signed forms from parents.
- Step 5. **Team Photo Uploading**: Take a team photo and upload it to the coach account on the web. Steps are: Logon your coach account. Click on "Team Management" tab. "Upload team photos" link on the left menu bar. Select the site and team.
- The requirements for the photos are: (1) standard **landscape picture** file such as jpg, gif or tif (width: height ratio should be 4:3 or 16:9) (2) smaller file size is recommended (3) must show all the team members listed (4) adult coach and volunteers may be in the picture (5) must show the identifiable team ID and team name (write down or print the number on a paper and hold it when taking the photo **or** edit the photo file to add text). The team ID number is decided in **Step 2** above. The photo must be uploaded within **3** weeks after the team registration **and** 10 days before the qualifying date. If no photo is uploaded before the deadline, certificates for the team will not have a team photo. There will be special prizes for Best Team Photos. Please upload the team photo as early as possible, since the uploading date is one of the selection criteria for the award.
- Step 6. **Robot Photo Uploading (Optional) & Final Update**: Take a photo showing your team robot(s), if your team wants. Upload the photo using the coach's web account **10 days before** your qualifying competition date. The robot photo requirements are the same as in (1), (2), and (5) in **Step 5** above. At this step, coaches must be sure to update any team information on the web. The final update deadline will be **10** days before the competition date for each qualifying site. This is a hard deadline, as time is needed to print and ship all the participant certificates to each site.

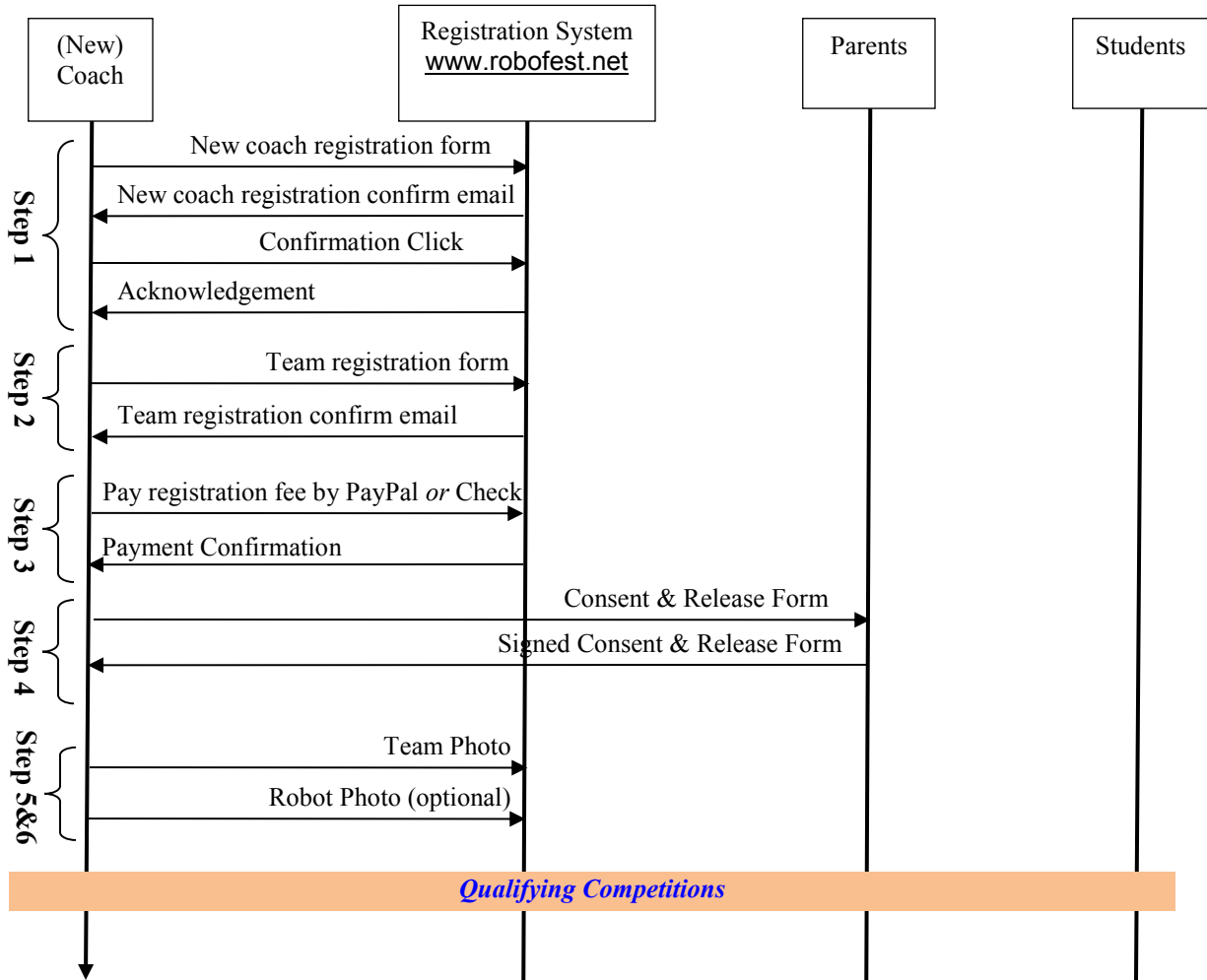


Figure 1. Team Registration Procedure Summary

4 Team Volunteers

The team cannot work without the help of various volunteers for jobs such as technical mentoring, financial sponsoring, transportation, constructing playing fields, preparing food, taking pictures, videotaping, etc. The Robofest website will list up to five volunteers per team. LTU/Robofest has become a Certifying Organization for the President’s Volunteer Service Award, or PVSA (www.presidentialserviceawards.gov). All Robofest team and site volunteers are encouraged to track service hours. You may be invited to the White House! To register, please contact Robofest Coordinator, **Susan Latos** at slatos@LTU.edu.

5 Common Sense Rules for Education

Construction of the robot body as well as all programming for the student competition should be done solely by the students. Parents, teachers, mentors, or coaches may not directly assemble the robots or directly write the program code for the team at any time during the preparation period or during the competition. Any direct participation is a violation of the rules. The offending team will become ineligible for any awards.

Only team members with name badges will be allowed in the pit (team table) area during the competition. **No adults are allowed in the pit area for all competition categories.** If a team coach must enter the area, they

must receive permission from one of the judging proctors. It is strongly suggested, for security purposes, that the coach have assistants watch the team table area, especially when the team is competing. The use of wireless communication by students in the pit area is prohibited.

6 Robofest Assessments

For the Robofest 2013 season, we will continue to assess the impact of robotics competitions in STEM education. The purpose of the assessment is to quantify and analyze students' improvements in STEM skills through Robofest. Competitions can drive students to work harder resulting in improved skills. We believe that students participating in robotics competitions will hone STEM skills and demonstrate skills they would not have gained outside of the competitions. To prove this, we need measurable data to quantify the student's experiences. We can use this data to highlight successes and determine areas of improvement. They will be assessed before and after the competition to see the level of improvement. Another group of students who did not participate in the competition will act as a control group and take the same pre- and post- assessments.

Pre-assessment instruction will be sent to coaches in January. Coaches will receive post-assessment instruction in early April. This assessment is anonymous and results may be published in a journal on education research.

7 Team's Responsibilities on Robofest Competition Day

- All teams must observe the check-in time set by the site host organizer.
- Things to bring to the Robofest venue:
 - Robot(s) and spare parts
 - A laptop or other computer for each team to solve unknown factors or adjust to the lighting conditions. It is **not** recommended that teams share computers.
 - *Exhibition teams*: poster boards to introduce the exhibition including a description and all the necessary materials for the exhibition
 - Fashion & Dance teams in Exhibition category: Music file and appropriate device for playing it. Your own stage
 - A power strip and power cable
 - *Lego RCX robot teams only*: Cardboard box to cover your robot and IR tower
 - Extra batteries or charger
 - Signed Consent & Media Release forms for team members, coach, and team volunteers – *required*.
 - Check-in fee, if your qualifying site charges a check-in fee. Check out your site home page.
- Teams must use the team table assigned by the organizer. Please do not change team tables. If you change, judges and the organizer *will not be able to* find your team.
- General Rules During the Robofest Competition:
 - No food or drink is allowed inside the contest area.
 - Flash photography is not allowed inside the competition area.
 - Do not make unnecessary noise which might disturb other teams in the pit area. Be respectful of all teams.

8 Rules for Video Submission Entry for Qualifying (Not for Regional Championship)

If there is no qualifying site near the team location (or under special circumstances) the teams may register on-line for Video Submission. Video Qualifier teams are required to pay the same registration fee. We will ship medals and certificates to teams. Trophies will also be shipped to winning teams. The following are the suggested video contents:

- Start with the team ID/name and team member introduction, around 5 seconds for each member.
- Introduce features of the robots, around 5 seconds for each robot.
- Demonstrate Game or Exhibition. The video should not be edited once the demo has started. See Game rules as well as the submission form for details about how to prepare the video.
- Rolling credit and/or acknowledgement (recommended).

Adults may help produce the video. If students were involved in the video production work, it should be acknowledged in the credits. The coach must submit a signed *Robofest Video Submission Form* when sending the video. Preferred submission method is to send a video sharing site link as well as the submission form by email to Robofest@LTU.edu. A DVD may be sent to **LTU Robofest, 21000 West 10 Mile Rd., Southfield, MI 48075, USA**. All the video submissions must be **received, not postmarked**, by the deadline, Fri. April 12, 2013, noon EDT.

9 Warm-up Competition

Warm up competition will be open to only registered teams and registered judges. It will not be open to the general public.

10 Judging and Prizes

Approximately 20% of the total number of teams at each Qualifying Competition site will win trophies to be presented during the award ceremony. Detailed judging rules are explained in each category's rules. Every registered team member will receive a certificate of achievement and a *personalized* medal during the award ceremony of the qualifying competition. All teams must stay for the closing ceremony.

11 Special Competition: Team Photo Contest

The best team photos will be selected from the uploaded team photos. Every team is automatically entered once the team photo is uploaded. Selection criteria include team spirit, unity, harmony and uniqueness. In addition, we are checking if the number of students in the photo is the same as the number of students in the system. A deduction might be made if the team photo was uploaded more than **3 weeks** after the team was registered.

12 Qualifying Competitions and Advancing to Regional Championship (RC) Rule

A team must be registered at an official local qualifying site at www.robofest.net regardless of the team country. Any exception must be approved by the Robofest office in advance. Official rules for each competition category detail how teams will be ranked during that specific competition. The total number of teams advancing from each qualifying site/competition Division will be decided in proportion to the number of teams registered at the site in each Division. Early competition date qualifying sites will advance more teams than late date sites. The number of teams qualifying for Regional Championships will be determined by the Robofest office after registration closes.

13 Robofest 2013 Regional Championships

Winning teams from numerous U. S. and international Qualifying Competition sites compete in a Regional Championship (RC) to qualify for the Robofest 2013 World Championship.

- For teams from Asia-Pacific: Regional Championship will be held in Korea in early spring 2013.
- For teams from Michigan Qualifiers: A Michigan Regional Championship will be held on April 27, 2013 at Lawrence Tech. There will be no check-in fee.
- All other advanced teams (from non-Michigan States and International) should be screened at Video Regional Championship. Game teams do *not* need to submit videos. Scores from qualifying events will be used to select Game teams to advance to the World Championship. However, Exhibition teams need to submit video sharing site links via email to Robofest@LTU.edu. Therefore, it is highly recommended to video-record presentations during the Qualifying competition. The deadline of the email submission is Friday, April 19, 2013, noon EDT.

14 Robofest 2013 World Championship

Top Game and Exhibition teams from the Regional Championships advance to compete in the World Championship at Lawrence Technological University on Saturday, May 18, 2013. Total of 60~65 teams will be invited. Teams must be present to compete at World Championship - video submissions will not be allowed.

15 Robofest Scholarships

Team members of the top Senior Division teams at the World Robofest Championship in Game, Exhibition, and VCRC will receive \$2,000 LTU annual renewable scholarships. Any Robofest participants may apply for a LTU annual renewable scholarship. Please contact Dr. Chung at chung@LTU.edu for details.

16 Reordering Certificates and Trophies

Robofest is pleased to provide certificate re-printing services for a minimum charge. Also, winning teams can order multiple trophies or certificates of award with individual names on a fee basis through the Robofest office. Visit the *2013* link on the Robofest home page for details.

Part 2 – Robofest 2013 Game Competition Rules

The name of the challenge for the 2013 competition is “SRCC”. Although Robofest allows up to seven members, we recommend three or four members per team to better engage students. Game rules are at: www.robofest.net and click on the “[Enter 2013 Competition](#)” link. These rules may be revised or refined during the season. Coaches are required to check the website and/or read emails about the possible changes.

Part 3 – Robofest 2013 Exhibition Competition Rules

The robotics Exhibition is a great way for students to show off their imagination, innovation and creativity. Each team has complete freedom to create autonomous robotics projects such as robot pets, robot artists, dancing robots, storytelling with robots, robots for scientific experiments, and practical robotics applications. Teams are composed of one to seven members. In general, two or three students are recommended per robot. Computer controlled robots may be of any size and can use any material as long as it is safe for team members as well as spectators. Even though human controlled remotes are not allowed, *unlike the Game*, wireless host computer program control is allowed for Exhibition, if the host side program is written by students. Robot-to-robot as well as human-to-robot interactions are encouraged. Sensors must be employed to assure the robot is interacting autonomously with its environment. To promote power & energy related science projects, a limited number of energy sensors are available for high school students to use in their exhibition. A suggested idea for 2013 year is interactive kinetic arts employing math, physics, and science concepts. **Any interactive robotic music is also suggested.** Please go to www.robofest.net and click on the [Exhibition](#) link to view Exhibition projects from previous years.

On the day of the Robofest competition, each Exhibition team will be given a 6ft or 8ft long table on which to demonstrate the robots. After the opening ceremony, teams will have **4** minutes to explain and demonstrate their robotics project to the public, possibly using a wireless microphone. Judges will visit the team table to ask additional questions and inspect program code any time before the final judging. “Silent Judges” may visit teams throughout the day to ask questions, check displays and observe interactions with spectators. These judges will not identify their roles.

Teams must bring all the necessary materials for the Exhibition. For example, if the Exhibition needs background music, the team must bring the music file. The sound system in the hosting site may not be available to play your music. Therefore, it is highly recommended to contact the site host in advance and/or bring music player/portable speakers, too. Teams are requested to bring poster boards to describe their projects. Hardcopies of programs to give to the judges are a plus, but not required.

We highly recommend each Exhibition team publish a video clip on a video sharing site such as YouTube. Judges will use this to preview the team projects and the team will get better scores for the presentation methods category. Teams should plan to show their video to the Judges in case they did not have an opportunity to view the video prior to the competition. The Exhibition team coach can update the video information and the URL using his/her Robofest account.

The judging score is based on the following criteria:

Application of math and science concepts – <i>VERY IMPORTANT!!</i>	25%
Wow! Factor and public demonstration performance (reliability)	20%
Originality (creativity, innovation and imagination)	20%
Presentation methods and student attitude for spectators; Information on the team poster; Information on the Internet such as Team page and YouTube video	10%
Source code and robot inspection	10%
Size, complexity and number of features/functions	5%
Usefulness / Practicality	5%
Entrepreneurial ideas, mindset, and plans; others	5%

The application of math and science theories that is appropriate to the team members' age level is a strong plus for judging. Even though the use of advanced level is fine to use, but it may not give any advantages for the judging.

Teams are strongly encouraged to choose unique project topics, and may risk losing points for creativity or other categories by choosing to continue a prior year's project. Teams with continuing projects must:

- Add new features and/or significantly improve or change one or more features
- Describe the addition and changes in the project description text area of the online team registration form
- During the official presentation, inform judges that their project is a "continued" form of a previous project

Spectators will decide People's Choice Awards during World Championship and Michigan RC. Only one vote per person is allowed.

Note: There will be NO independent RoboFashion & Dance (RFD) category in 2013. However, teams may enter robot dance or fashion show projects under this Exhibition category. Teams must bring their stages to the competition site.

Part 4 – Associate Competition Rules

Robofest provides the following associate competitions for more opportunities in STEM learning through robotics. Teams are required to register using the same steps in Part 1 Section 3.

Vision Centric Robot Challenge (VCRC)

The contestants are to use any robotic platform with a vision system and implement vision guidance software to allow the robot to maneuver a given obstacle course. There are high school and college divisions. Detailed rules and supporting materials can be accessed through the web page <http://www.robofest.net/collegiate> . These rules may be revised or refined during the season.

Bottle RoboSumo (a.k.a. RoboShove)

The objective of the game is to either be the first robot to find and intentionally push a 2 liter bottle (filled with 1 liter of water – see Figure 2) off the table OR be the last robot remaining on the table. Detailed rules can be found at www.robofest.net and clicking on "Bottle RoboSumo" link.

Appendix 1:

Robofest 2013 Coach's Pledge

As a Robofest coach, I have read and agree to abide by the Robofest 2013 rules (<http://www.robofest.net/2013/robofest12rules.pdf>) as they exist now and as may be set forth or amended during the Robofest season.

As a coach, I am responsible for communicating and enforcing the Robofest rules to team members, team volunteers, and others affiliated with my team.

I understand that any rule updates, guidelines, additional information, and announcements will be communicated to me primarily via emails and web updates. I am responsible for reading the information and I will relay it to all the people affiliated with my team. If there are any changes in my email account, I will notify Robofest administrators and update my coach profile.

As a Robofest Coach, I understand that the students come first. Robofest is about students learning S.T.E.M. Everything my team does starts and ends with the principle: **the students do all of the work**. My team members will do the designing, building, and programming of the robot. Adults may help them find the answers, but cannot give them the answers or make the decisions in detail.

Acceptance of this pledge signifies my intent to uphold and maintain the Robofest spirit. ***This will be signed when coaches register teams on-line.***

Appendix 2:

Example Qualifying Competition Schedule

(Assumption: eight Jr. Game, six Sr. Game, and five Exhibition teams; plus **three** official Game playing fields. There is no official lunch time, but a food concession stand may be open.)

8:00am	Doors Open and Check-In begins. Find your team table after check-in. Both practice and official playing fields are open for practice. Setup Exhibitions.
9:00am	Opening Ceremonies <ul style="list-style-type: none"> • National Anthem • Opening Remarks • Introduction of Judges • Explanation of key Robofest competition rules
9:20 – 9:30am	Unveiling Unknown Factors (1) for the Game teams (No adult allowed in the pit from this point on)
9:30 – 10:00am	Official presentation and demonstration of Exhibitions (6 min x 5 = 30 min) Game teams work on unknown factors.
10:00am – Noon	Exhibition and silent judges will visit Exhibition team tables for interviews
10:00 – 10:05am	Game Robot Impounding
10:05 – 10:40am	Round 1 Jr/Sr Game competition begins on three Game playing fields in parallel. Teams compete in a pre-determined order set by the site host. Two or three teams will be timed and judged at the same time. Each round will be 7 minutes on average in length, which includes: <ul style="list-style-type: none"> • Move-in (2 min), • Team introductions (max 1 min), • Play (2 min), and • Move-out and return robot to impound area (2 min). With 14 Game teams, there will be five Round 1 competitions for a time of 5 x 7 = 35 minutes; 10 minute break;
10:45am	Unveiling Unknown Factors (2)
11:15 – 11:20am	Game Robot Impounding
11:20 – 11:45am	Round 2 Game competition begins in the order determined by the site host. There will be no team introductions, 5 x 5 = 25 minutes.
11:45am – Noon	Break. Judges tabulate final scores.
Noon	<ul style="list-style-type: none"> • Recognition of Coaches, Teams, and Team Members: Coaches will award Medals and Certificates of Achievement to students • Take a group photo with all coaches and team members. The group photo must be submitted to Robofest office for the official 2013 video. Playing music is recommended at this time.
12:15pm	Awards and Closing Ceremony: Judges should line up and congratulate winning teams. See the illustration below. Announce the teams that will advance to Regionals.
12:25pm	Recognition of Volunteers Volunteer Group Photo / Cleanup

