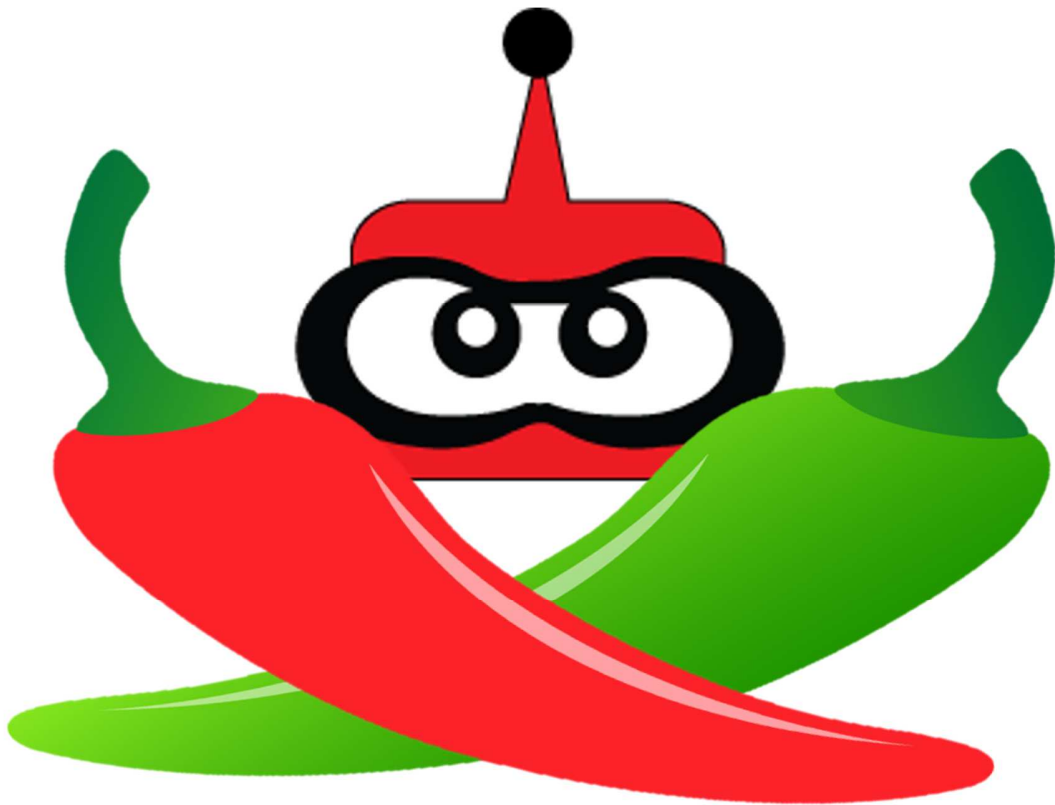


2015 KIPR Open

Autonomous Robot Tournament Game Specification Version 1.0



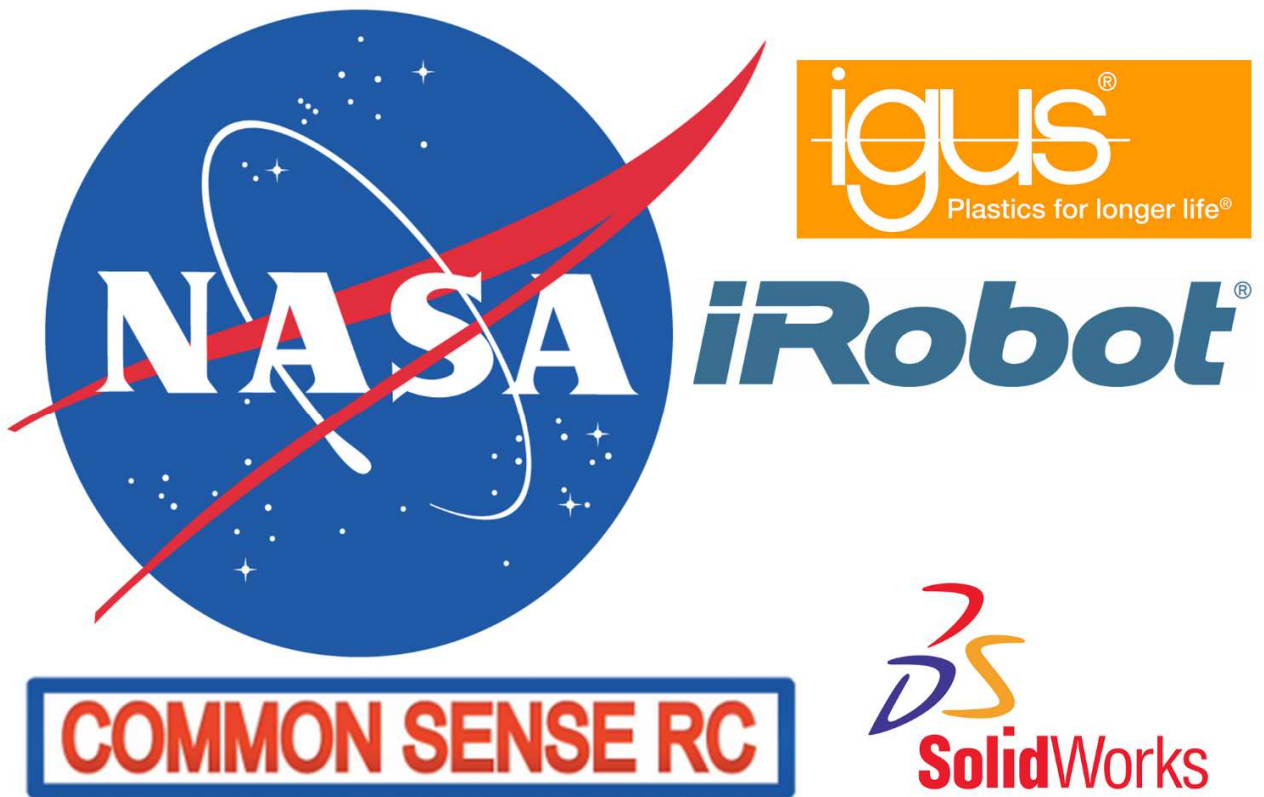
RED OR GREEN?

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Update History

Version 1.0: November 3, 2014.

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International KIPR Open Tournament

KIPR produces the International KIPR Open Autonomous Robot Tournament each year at the Global Conference on Educational Robotics. The 2015 Global Conference on Educational Robotics will be held in Albuquerque, NM at the Albuquerque Embassy Suites Hotel & Spa, July 7-11, 2015. For more information on GCER, please see <http://www.kipr.org/GCER>.

KIPR Open Game

The KIPR Open Game is an autonomous robotics challenge designed and distributed each year by the KISS Institute for Practical Robotics (KIPR) to encourage ongoing robotics education beyond the high school level. This document presents the official game rules for the 2015 KIPR Open Game, subject to modification and adjustment in response to errata, oversights, or participant queries. The KIPR Open Game rules may be used free of charge for educational purposes. They are regularly used in conjunction with collegiate coursework and in educational robotics events around the world. For the latest information on the KIPR Open Game and the International KIPR Open Tournament, including updates to this rules document via posted notifications and FAQs, go to <http://www.kipr.org/kipr-open>.

For information on KIPR's Botball Educational Robotics Program for students in elementary school, middle school, and high school visit <http://www.kipr.org>.

This Year's Game: Red or Green?

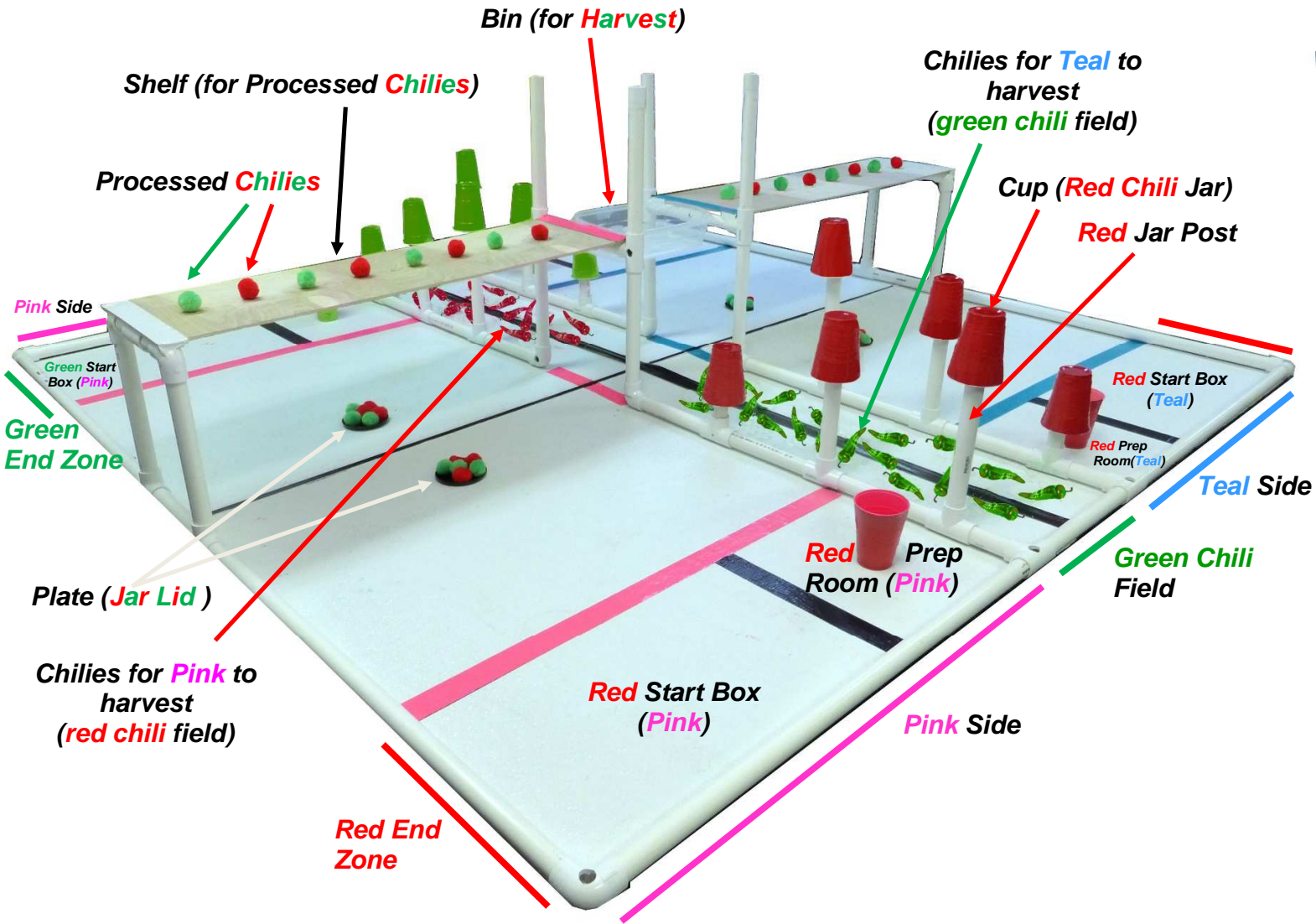
The objective for this year's game challenge reflects the love for red or green chili peppers in the Desert Southwest. The objective is twofold:

1. harvest a row of red or green chili peppers and deposit them in a bin for future processing.
2. collect red and green chili peppers that have been processed, sort them according to type, and can them in jars.

Team Identification

For each round, a team will be identified as the Pink team or the Teal team, depending on which side they set up on. Pink tape lines identify the Pink side and Teal tape lines identify the Teal side. The Pink side scores red chili peppers in the central bin. The Teal side scores green. During seeding, teams can "vote" their preference for Red or Green by selecting which side they want to be on.

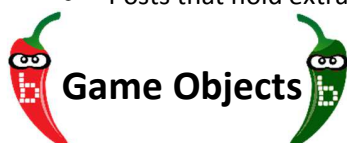
The Game Board



Scoring

Scoring Areas

- Central Bin for freshly harvested chilies (used by both teams)
- End Zones (for processed chilies)
- Prep Rooms (for canned chilies)
- Sales Rooms (aka the Start Boxes - for canned chilies)
- Posts that hold extra Jars (cups) to use in canning chilies



- 25 – green artificial chili peppers
- 25 – red artificial chili peppers
- 20 – red processed chili peppers (red poms)
- 20 – green processed chili peppers (green poms)
- 8 – jars for green processed chili peppers (16oz green plastic souvenir cups)
- 8 – jars for red processed chili peppers (16oz red plastic souvenir cups)
- 4 – jar lids (white 4" mini-Frisbees/plates)

Specifications for game objects will be on the KIPR Open web site at
<http://www.kipr.org/kipr-open>.

"Official" souvenir items (cups and mini-Frisbees) will be available through the KIPR store at
botballstore.org. They are sourced through

<http://www.discountmugs.com/product/cps0304-imprinted-4-inch-mini-flyers/>

<http://www.discountmugs.com/product/sc16-16-oz.-plastic-stadium-cups/>

The artificial chilies are identified as "*Moving Box 50pcs Artificial Lifelike Simulation Red and Green Pepper Chili Paprika Home Kitchen Decoration Photo Props*" at Amazon.com and can be ordered through them (current pricing is about \$13 including shipping).

Scoring Rules

The official scoring rules for the 2015 KO Game are made up of this 2015 KO Game Review document and any updated scoring rules posted via the KO web site as responses to FAQs or other issues raised prior to the start of the tournament. If rule adjustments are of sufficient volume to so warrant, an updated version of this document may be posted to provide collated changes and adjustments, notated on the update history page above and by a revised version number. Rule changes may occur as late as the team briefing held with the judges at the tournament venue prior to the tournament.

The objective for the game is to harvest chili peppers and put them in the central bin, collect and sort processed chilies (red and green poms), putting them in correspondingly colored cans, capping cans and moving them to the end zone of the matching color.

More specifically,

1. There are two kinds of chilies on the game board, those ready to harvest (artificial realistic looking red and green chilies) and those that have been processed and are ready to be canned (red and green poms).
2. One side of the game board is identified as the Pink side and the other side as the Teal side, where each side has a red end zone on one end, a green end zone on the other, and is bisected by a shelf.
 - a. The red end zones for the two sides (Pink and Teal) are adjacent, and likewise for the green end zones.
 - b. The floor of each end zone is identified by the inside edges of the colored tape and PVC that surrounds the end zone, and includes the black tape separator in each end zone.
3. There is a chili field between the two sides, one end of which, the Green Chili Field, has a row of green chili peppers ready for harvest, and the other end, the Red Chili Field, has a row of red chili peppers ready for harvest.
 - a. The Green Chili Field separates the two red end zones and the Red Chili Field separates the two green end zones.
4. Each shelf has a row of 8 processed chilies (poms) on it, with 4 red poms alternating with 4 green poms as pictured, centered on the shelf and spaced 4" apart on centers.
5. The red end zones are for processed red chilies (poms) and the green end zones for processed green chilies.
6. Cups represent cans for holding processed chilies (poms), red cups for red chilies and green cups for green chilies.
 - a. For items to score in a cup, the cup's base must touch the table surface.
 - b. For a cup to be *upright*, its base must touch the table surface and its rim must be off of the table surface (resulting in more points than if just knocked over).
 - c. Cups (and lids) may be supported by a robot or an appliance (subject to the limitation for how many independent objects are allowed).
 - d. A cup inside a cup counts as a single cup.
7. Inverted red cups are placed on the 6 Jar Posts between the two red end zones and green cups are placed on the 6 Jar Posts between the two green end zones.
 - a. The four posts surrounding the bins are not Jar Posts and do not have cups on them.
8. For each shelf, two plates (inverted Frisbees) of processed chilies (3 green and 3 red poms, random order) are on the table surface on each side of the shelf, centered on the shelf and 6" on center out from the shelf's edges.
 - a. When turned back over each plate is a Jar Lid.
 - b. Jar Lids do not have a color identification and can be used to cap any cup, regardless of its color.
9. The Bin is in the center of the game board between the two rows of chilies and is the same as the 9 x 12 x 3 storage bin spec'd for the Botball 2015 game (its bottom clears the table surface by approximately 12.5" and its lip overlaps the shelf surfaces to some extent).
 - a. The Bin is for harvested chilies.

- b. Red Chilies in the Bin score for the Pink Side, Green Chilies for the Teal Side.
 - c. To be in the Bin, some part of a game piece must be in the volume of the Bin.
10. There are two Start Boxes for each side, one in each end zone and both 15 x 24 x 15 inches high.
- a. The boundary for the base of each Start Box is defined by the **inside edges** of the colored tape, black tape, and PVC that surrounds the base of the Start Box.
 - b. Each Start Box has a 15" virtual ceiling.
 - c. The two Start Boxes for a side are identified as the Red Start Box and the Green Start Box corresponding to end zone color.
11. There are two Prep Rooms for each side, each of which makes up the balance of its end zone after the Start Box is removed (so each Prep Room has a 14 x 15 floor).
- a. The boundary of each Prep Room is defined by the **outside edge** of the black tape and the **inside edges** of the colored tape and PVC that surrounds the Prep Room (i.e., the black tape is in the Prep Room).
 - b. The two Prep Rooms for a side are identified as the Red Prep Room and the Green Prep Room to match the Start Box (and end zone) color.
 - c. Each Prep Room contains an upright cup matching its color and located in its center.
12. To be in a Start Box or a Prep Room, a cup must intersect the vertical projection of the Start Box or Prep Room and its base must touch the table surface.
13. For a Lid (mini-Frisbee) to be on a Jar (cup), the **underside** of the Lid must touch the rim of the cup, the Lid cannot be touching the surface, and the cup must be *upright* (defined above). Extra points are awarded if the Lid fully covers the rim of the cup, in which case the cup is *fully capped*. If the cup is not fully capped but the Lid is on the cup, the cup is *partially capped*.



Fully capped cup



Partially capped cup

14. For a pom to be in a Jar (cup), the base of the cup must touch the table surface and some part of the pom must be in the volume of the cup.
15. A Jar Post that has nothing on it at the end of the game scores for the side it is adjacent to (Pink or Teal).
16. An unprocessed chili pepper in a cup cuts the value of the contents of the cup in half.
17. A processed chili (pom) in the bin has been wasted, neutralizing a chili of its color; i.e., each pair of (red pom, red chili), (green pom, green chili) has no score - excess poms do not affect the bin score otherwise.
18. A game piece cannot score in more than one area. If it is in more than one area it is counted as being in the area which produces the higher overall score.

If your team doesn't agree with the score as calculated they must immediately notify the table judge(s) before leaving the table and before any items have been moved on the table. Teams will be required to initial the score sheet before leaving the table – this signifies they accept the score.

Scoring Summary

Bin: 5 points per chili

Only artificial chilies score in the Bin. An artificial chili will be removed from the bin by the judges for each pom of the same color that is in the Bin before scoring the Bin.

Points for red chilies in the Bin are awarded to Pink.

Points for green chilies in the Bin are awarded to Teal.

Jar Post: 1 point per empty post

An empty Jar Post adjacent to Teal (whether red or green) scores for Teal.

An empty Jar Post adjacent to Pink (whether red or green) scores for Pink.

Cup: 5 points for partially capped, 10 points for fully capped

These points are awarded to the side the cup is on whether or not the cup has anything in it.

Partially capped and fully capped are defined above.

Pom with end zone's color on floor of end zone: 1 point

One scoring pom will be cancelled out for each pom of the opposite color and each chili of either color on the floor of the end zone. Excess mismatches on the end zone floor are ignored.

Pom with cup's color in a cup: 2 points

1. If there are any artificial chilies of either color, or poms of the opposite color, in the cup, the points for poms in the cup are divided by 2 (cut in half).
2. For a *partially capped* cup, the value of each same colored pom increases by 2.
3. For a *fully capped* cup, the value of each same colored pom increases by 4.
4. For an *upright* cup in a same colored Prep Room, the value of each same colored pom increases by 2.
5. For an *upright* cup in a same colored Start Box, the value of each same colored pom increases by 4.

[the pom increases in value additively starting from 2, depending on capping, cup location, or the presence of a mismatch; e.g., a red pom in a fully capped red cup in the red Start Box is worth $2+4+4 = 10$ points unless there is a chili or a green pom in the cup, which would cut the value to 5 points].

Scoring: General

1. Teams score points by putting objects into a scoring area or by removing cups from posts.
2. Judges score the game after the end of the match.
3. Each game piece that scores will only be scored for its highest scoring position, no matter how many areas it might otherwise score in.

Scoring Item Layout

8 red and green poms are placed on the shelves as pictured, 4" apart. 3 red and 3 green poms are placed by judges in each of the 4 plates randomly. Each plate is located 6" in front of the shelf edge and centered on the shelf.

50 artificial chilies are randomly strung along each of the two rows for the field, one row having 25 red chilies and the other 25 green ones. The table will be marked at set up as to which row is red and which is green so the orientation is consistent throughout the tournament.

6 red souvenir cups will be placed upside down on the posts framing the green chili row. 6 green souvenir cups will be placed upside down on the posts framing the red chili row. A red souvenir cup will be placed upright in the center of each red Prep Room. A green souvenir cup will be placed upright in the center of each green Prep Room.

The judges will conduct a briefing with the teams in advance of the tournament to clarify (and possibly adjust) game rules or board setup ; e.g., adding an awning over the storage bin (hung on the four posts surrounding it) if local conditions warrant.

Scoring examples

1. *At game end:*

Bin: 8 green chilies, 5 red chilies, and a red pom in the bin.

Teal Side: 1 green cup and 2 red cups have been knocked off Teal's posts and are lying on the surface. A plate has been pushed into Teal's Red Start Box still containing 2 green poms and 1 red pom. 2 red poms and 1 green pom are on the floor of the Start Box.

Pink Side: All of Pink's posts still have cups on them. A red cup has 3 red poms and 2 green pom in it and is partially capped. It is being held by a robot so as to be upright with the base of the cup touching the floor of the Red Prep Room. A fully capped green cup is out in the middle with a red pom in it.

Analysis:

Bin score: remove 1 red chili for red pom. $8 \times 5 = 40$ points for Teal, $4 \times 5 = 20$ points for Pink

Teal: judges remove red-green pom pair from Red End Zone floor and remove the plate and its poms since they don't touch the surface

3 points for empty posts

1 point for the red pom in the Red End Zone (irrelevant that it is in the Start Box section of the End Zone)

Pink:

5 points for the partially capped red cup

9 points for red poms in the partially capped red cup

Add 2 points per pom for being partially capped, plus 2 more points for the cup being in the Red Prep Room, raising the value of each pom in the cup to 6 points, which is then cut in half to 3 points since a green pom is in the cup.

10 points for fully capped green cup

Each green pom in the fully capped green cup has 4 points added, but there are no green poms in the cup, so the cup produces no pom points.

Score: Teal = $40 + 3 + 1 = 44$; Pink = $20 + 5 + 9 + 10 = 44$

Tie Breaker: Pink wins for having the most fully capped cups.

2. *At game end:*

Bin: 18 green chilies and 1 red pom

Teal Side: all 3 of Teal's green cups have been knocked off their posts, but none of Teal's red ones. A plate is turned over and is lying in the Red Prep Room. 5 red poms are on Teal's Red Prep Room floor. One green and two red chilies are in the Red Start Box. One red cup with a red pom that intersects the cup interior even though stuck on a robot is lying on its side outside of Teal's End Zones but with its rim touching the floor of the Red Start Box. Another red cup is upright in Teal's Green Start Box with two red poms in it. A green cup has 3 green poms, a red chili, and a green chili in it and is upright in Teal's Green Prep Room.

Pink Side: 1 of Pink's green cups has been knocked off its post but no red ones. A fully capped red cup is in the Pink's Red Prep Room with 5 red poms in it. 3 green poms are on the floor of the Red Prep Room. A fully capped green cup is in Pink's Green Start Box with 3 green poms in it. 3 red poms are on the Green Start Box floor. A green cup is on its side in Pink's Green Prep Room with a red and a green pom in it.

Analysis:

Bin score: red pom doesn't affect green chilies. Pink gets 0 points, Teal gets $18 \times 5 = 90$ points

Teal: judges remove a 3 red poms from Red End Zone floor for the 3 chilies that are present and remove the plate as irrelevant.

3 points for empty posts

2 points for the red poms in the Red End Zone (irrelevant that they are in Teal's Red Prep Room section of the End Zone)

2 points for the 1 red pom in the red cup lying on its side - no additional points since it is not upright (even though touching in the end zone)

4 points for the 2 red poms in the upright green cup in Teal's Green Prep Room

No points are added to the value of each pom for being in an upright red cup since it doesn't color match its location, leaving each pom's value at 2 points

Pink:

The green poms on the floor of the Red Prep Room have no effect since there are no red poms in the Red End Zone. Likewise for the red poms on the floor the Green Start Box
1 point for empty posts.

10 points for the fully capped red cup.

40 points for the red poms in the fully capped red cup

Add 4 points per pom for being fully capped, plus 2 more points for the cup being in the Red Prep Room, raising the value of each pom in the cup to 8 points

10 points for the fully capped green cup.

30 points for the 3 green poms in the green cup in the Start Box.

Add 4 points per pom for being fully capped, plus 4 more for the cup being in the Green Start Box raising the value of each green pom to 10 points.

1 point for the green pom in the green cup lying on its side

There are no additional points for being in the Green Prep Room since the cup is not upright. Pom points are cut in half since both red and green are present; i.e., each green pom is worth 1 point.

Score: Teal = $90 + 3 + 4 + 2 + 4 = 103$; Pink = $1 + 10 + 40 + 10 + 30 + 1 = 92$

Tie Breaking

In the event of a tie, the following tie breakers will be applied to determine the winning team (inorder):

1. Team with the most fully capped cups
2. Team with the most partially capped cups
3. Team with the most chilies in the bin
4. Team with the most matching poms in cups
5. Team with the most chilies and poms in cups
6. Team with the most poms in end zones
7. Team with the most empty posts
8. Team with the most inverted plates (under side of Frisbee is down)
9. Team with the fewest poms on their shelf
10. Team with the fewest chilies of their color in the chili fields
11. Team with the most cups on their side
12. Team with a robot power switch closest to the center of the board

Game Board Construction

Game Surface Materials

To build the Game Board surface, you will need:

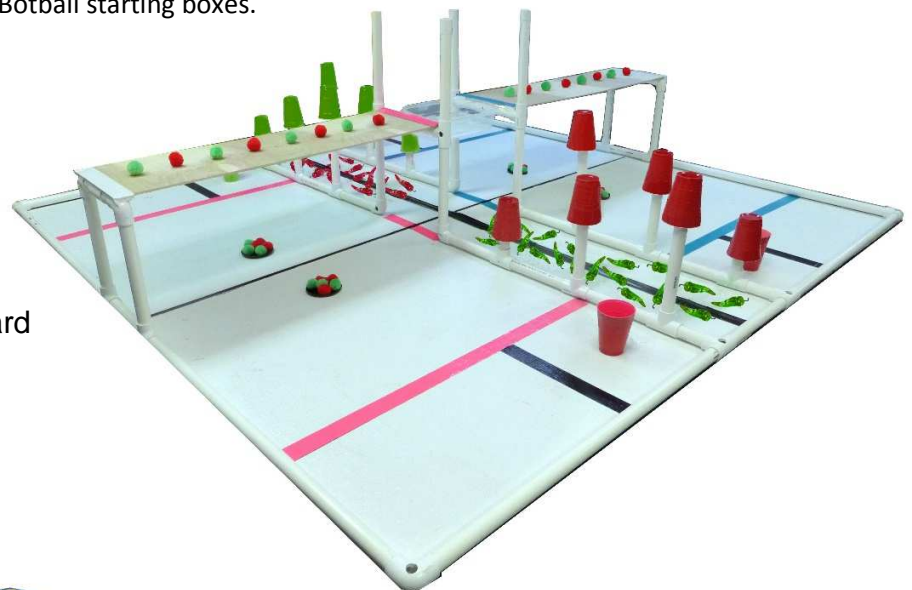
- 4 pieces of 4x4' MDF or plywood (122cm x 122cm)
- 2 pieces of 4x8' Fiberglass Reinforced Panels (FRP) (122cm x 122cm) [Home Depot Store SKU# 121586]

These are the same materials used for the surface in last year's game.

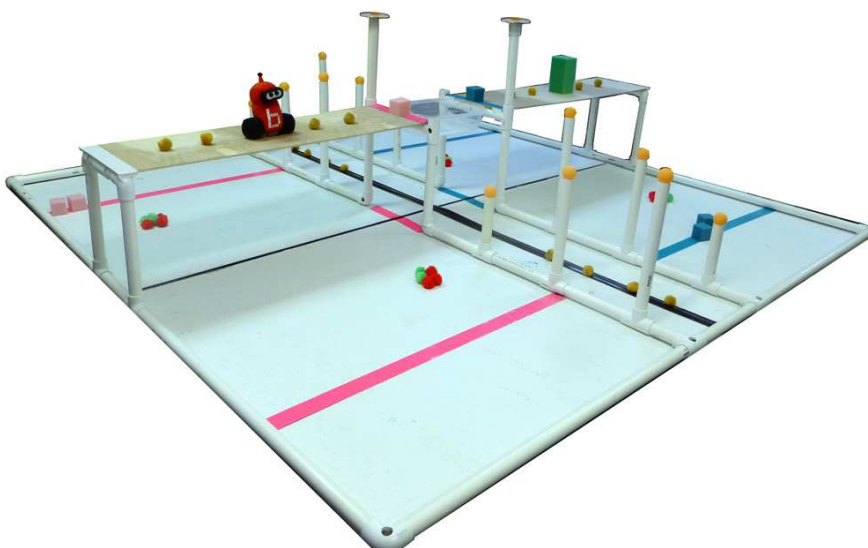
Game Board Layout

The KIPR open board is modeled off of the 2015 Botball board with the following changes:

- Add two posts to form the umbrella protective stand over the storage bin.
- Add lines in the End Zones to mark off the four 15 x 24 x 15 Start boxes. The 15" (virtual) height is 3" more than the Botball starting boxes.



2015 KO Board



2015 Botball Board (specs available from KIPR)

Robot Construction Rules

The following rules apply to all robots to be entered in the KIPR Open Robot Game:

1. A team's entry (all materials placed on the game-board) must mass less than 10kg (22 pounds).
2. A team's entry (all materials placed on the game-board) must fit within their (virtual) Start Boxes without restraint (other than pressing against interior edge of any game board PVC bordering a Start Box). Each team has two 15 x 24 x 15 Start Boxes on their side and can use either or both, but for starting can only use the two lights provided.
3. The team's entry may not contain or release pressurized materials at greater than 7 bar (100 psi).
4. The team's entry may not release any liquids during the game, or before, during, or after the game while the team is at the game table.
5. The team's entry may not release any gasses while at the game table that are considered hazardous by the judges, or are at a temperature below 0°C (32°F) or above 50°C (122°F).
6. Robots may not contain features (manipulators, protrusions or materials) that are designed to, or are deemed by the judges likely to, cause damage or destruction to the game board, or to game pieces, or to a reasonably constructed opponent robot; in particular, things like needles serving to penetrate game objects or otherwise, or the use of a sticky substance to pick up game objects are prohibited.
7. A team's entry may not contain features (manipulators, protrusions or materials) that are designed to, or are deemed by the judges likely to, cause jamming or entanglement of a reasonably constructed opponent robot. Blocking and containing of opponent robots is allowed; strategies likely to entangle or damage opponents or the board or game pieces are not allowed.
8. Robots must operate autonomously (no external power or control from outside of the game board area will be allowed).
9. Each team may only have a maximum of five independent structures on the game board at a time.
10. Each robot must have a name suitable for broadcast over a PA system.
11. Team entries may NOT contain parts that may reasonably be confused with game pieces or table elements (entries may not contain mirrors, lights, colored objects, or tape designed to confuse an opponent).
12. A team's entry may be made out of any materials or parts (including Botball and non-Botball kits) as long as the entry conforms to the construction rules above.
13. No projectiles can be used other than game pieces and once collected may be launched by the team's robots with no restrictions.
14. Electrical tape (either black or white) may be used (or required to be used by judges) to cover metal pieces that are deemed to otherwise be a safety risk to robots or humans.
15. For any robot whose safety is in question, judges will decide whether or not the robot is allowed to compete. All judging decisions are final.

KIPR Open Tournament Rules

Team Membership

- At least one team member must be beyond High School in their educational careers.
- College students, professional engineers, hobbyists, poets, and anyone else fulfilling the criteria above are all encouraged to participate.

Game Length

Game duration is 180 seconds.

Seeding/Performance Rounds

1. S/P Rounds take place before the double elimination rounds
2. S/P rounds consist of best two out of three, unopposed rounds
3. Teams choose which side to play unopposed, Teal or Pink.
4. Scoring = (your points) - (their points)
5. Scores of less than 0 will be counted as 0
6. Passing on a round gives a score of -1 for that round
7. Seed Score = average of best two rounds

Double Elimination Tournament

1. A team is out of the tournament when it has lost two games
2. Initial matches are decided by seeding round
3. Matches are arranged using KIPR tournament software
4. Judges' decisions are final

Double Elimination

1. A team's entry must have broken the border of a Start Box sometime during the 180seconds of game play or that round will be forfeit.
2. Robots must stop all motors and other actuators at the end of the round. Failure to do so will result in loss of round (unless the other team never broke out of the Start Box).
3. If neither team's entry manages to break the border of a Start Box during game play, the round will be replayed once. If it happens again during the replay, the round will be decided by coin toss.
4. At least one robot from a team must be outfitted and programmed to respond to the starting light. A robot team that operates exclusively on a timer triggered by a hand operated switch is not allowed and will automatically cause that team to forfeit that round.

Tournament Logistics

1. Side assignment is determined by the scoring software. During seeding teams can play the side of their choice. A team can set up in either or both of the two start boxes on their side.
2. Teams will give a friendly nod, wish of good luck, and visually inspect each other's robots **before calibration**. Inspection is limited to a maximum of one (1) minute unless a specific challenge is made. Teams must notify table judges **before the end of "Hands Off"** if they believe the table is not set up properly. When both teams are ready, or judges decide adequate time has been allowed for calibration, each team positions/activates its robots and then --**Hands Off!**
 - a. Judges will be the final arbiter.
 - i. Judges can dismiss what they believe to be spurious challenges
 - b. Teams found in violation will (unless the judge decides there have been extenuating circumstances) forfeit that round or at the judge's discretion, be allowed to remove offending elements before the round begins.
3. If the judges determine a robot violates the construction rules, whether or not a challenge has been made, that robot will not be allowed to run until it has been modified to meet the rules.
4. Construction rules apply only to what is brought to the game table.
5. Teams cannot use wireless links to program their robots within 10 yards of the game board and cannot use wireless links to send information or commands to a robot during a game.
6. During setup teams may adjust starting lights:
 - a. Starting lights may not be in physical contact with any robot
 - b. Starting lights may not be aimed to disrupt an opponent or blind anyone (judge's decision)
7. During setup teams perform any necessary calibrations needed by their robots.
8. Setup time should be two minutes or less.
9. **For each minute or fraction thereof in excess of 2 minutes the team's score will be reduced by 20%.**
10. When both teams are ready, or judges decide adequate time has been allowed for calibration, teams activate their robots and then -- Hands off!
11. After hands off, no part of a team's robot(s) may leave its Start Box until the starting lights turn on.
 - a. If this happens, the judges will call a fault on the team.
 - b. If a team receives a 2nd fault in a round, they forfeit the round.
12. After hands off, judges will finalize game board setup - the only random placement in this year's game is how poms are distributed on the plates and how the chilies are distributed in the field.
13. After hands off, judges will turn on the starting lights to signal game start.
14. After hands off, teams may not broadcast ANY physical or electromagnetic signals to robots.
15. When the starting lights turn on the robots must autonomously start, whether or not they leave their Start Boxes.
16. Lights will remain on for 5 seconds, turn off for 170 seconds and flash the last 5 seconds.
17. Once the starting lights turn on, the round counts unless a judge rules outside interference.
18. Robots must cut power to their motors and turn off or stop issuing motion commands to servos by the end of the round or risk forfeiting the round.
19. Scoring is based on the location of pieces at the end of the round, not how the pieces got there.
20. There are no instant replays, and attempts to use videos to question a decision will be ignored.
 - a. If a team is unhappy with a judge's decision, they should challenge it then and there.
 - b. Challenges to scoring after the teams have left the table, will not be considered.
21. Teams cannot touch, borrow equipment, modify robots or computers, or beam commands to another team's stuff (including their pit table) without the permission and presence of a member of that team.

Overall Winner Calculations

A team's overall score is calculated as the sum of their Seeding and Double Elimination scores. The overall score is between 0 and 2.

Seeding Scoring Formula

$$\text{SeedScore} = \frac{3}{4} \left(\frac{n - \text{SeedRank} + 1}{n} \right) + \frac{1}{4} \left(\frac{\text{TeamAverageSeedScore}}{\text{MaxTournamentSeedScore}} \right)$$

Double Elimination Scoring Formula

$$\text{DoubleEliminationScore} = \left(\frac{n - \text{DERank} + 1}{n} \right)$$

Note: For all formulas n = Number of Teams at Tournament

Advice for Tournament Participants

Test your robots from start to end:

- a. Go through the entire starting sequence
- b. Test your robot on both sides of the game table
- c. Make sure you can calibrate to the starting lights
- d. Make sure the robots stop when they are supposed to: verify with a stop watch!
- e. Does the starting sequence work with very different lighting conditions? (tournament tables may or may not have lights above them)
- f. Test the shielding of your sensors!

Check out the KIPR Open Robotics Game discussion board and FAQ at <http://community.botball.org>, for

rules updates.

Also check <http://www.kipr.org/kipr-open> regularly for rules updates that may or may not appear with an FAQ answer or as updates to this document.

Good Luck!