

**Rules for**  
**“Cube Quest RC”**  
**Version 110719**

**Object of the game:**

Gather good (red) blocks from the playing field and place them in your goal area. Avoid bad (blue) blocks, or place them in your opponent’s goal. Bots may remove blocks from the opponent’s goal. The game is played in head to head, match style competition with 2 tele-operated (RC) bots at a time.

**1. Blocks**

- a) Block size is 1.5 inches cube with 1/16" +/- tolerance with rounded edges.
- b) +1 scoring blocks are painted with Krylon Fusion #2328 “Red Pepper”, -1 blocks are painted with Krylon Fusion #2329 “Patriotic Blue”.
- c) Blocks used per match – 60 (30 red, 30 blue)

**2. Playing Field**

- a) Size: 6x6 foot
- b) Floor material: Gray carpet from Lowes. ST103 Stratos / 830 Gray . Lowes carpet item #97937.
- c) 12x12 inch goals at corners, surface painted semi-gloss black.
- d) Walls behind goal are 5 inches high and extend 12 inches from corner on each side painted semi-gloss white. The bottom 2.25 inches of the goal walls will be painted green. The walls behind one goal will have a ¾ inch wide vertical black stripe from the top to the green stripe centered on each wall. The walls behind the opposite goal will have a pair of ¾ inch wide vertical stripes from top to the green stripe spaced 1.5 inches apart centered on each wall.
- e) Field walls are 2.25 inches high and painted green (Paint: Krylon Fusion “Spring Grass” #2327).

**3. Beacons (optional)**

- a) Beacons will be continuous white polarized light from 50 watt, 40 degree beam width halogen bulbs. One beacon will be horizontally polarized and the other vertical. The beacons will be placed behind the corners of the goals at a height of 7 inches.

- b) Beacons are not needed and will not be used. However, a contestant with a semi autonomous robot may request beacons. In such case both beacons will be placed.

#### **4. Bots**

- a) Size: Bots must fit in a 12" wide x 12" long x 18" tall box at start but may expand into an 18" diameter by 18 inch high cylinder after starting. The expanded measurement will be taken with all extremities at their full mechanical extension.
- b) Weight limit – 20 lbs.
- c) Swarm bots are NOT permitted.
- d) Any control method or combination of control methods is acceptable, including, remote control (radio, IR, voice, etc), onboard autonomous control, remote computer control.
- e) Bots may use any means to move blocks into the goals. Bots may store any number of blocks on-board before depositing them in the goal. Blocks may be thrown a maximum of 3' in the air from the bot. Any block forced or thrown out of the arena will count as a -1 penalty per block to the bot that caused it to go out.
- f) Weapons are banned. Only pushing and blocking are allowed. You may not intentionally force another bot out of the arena. No intentional damage to playing area, blocks, beacons or opponent allowed.
- g) Bots may be deemed unsafe and subject to disqualification by judges before start or during match.
- h) Bots may not deposit anything on the playing surface. Bots may not mark the blocks, playing surface or opponents with any substance such as ink or paint.

#### **5. Play**

- a) Blocks are to be scattered into the playing area with the majority of them being near the center. No blocks will be in either goal at the start of the match
- b) Competing bots must be entirely inside their goal in their compact state at the start of the match.
- c) Timing of the match
  - i) The judge will give a 5-second countdown to the start.
  - ii) Any Bot starting early will be charged with a false start and given a warning.

A Bot with a second false start will forfeit the match.

- iii) The match will last 120 seconds. The judge will call the end of the match at which time bots must stop.
  - iv) Blocks moved after the end of the match will not be counted.
- d) A bot forfeits the match if it voluntarily leaves the playing field at any time during play.
- e) At the end of a match, only blocks entirely inside the goal count. If bot is also in goal and contains blocks that are not entirely inside the goal they do not count. The judge will be the final say on all scoring matters. If a bot must be moved to determine scoring it will be the judge that moves the bot.
- f) A bot's score shall be the number of red blocks in his goal (1 point each). Deducting the number of blue blocks in his goal (-1 point each). Also deducting any penalty points. The winner of the match shall be the bot with the highest score.
- g) If match ends in a tie, the match will be restarted after 1 minute. After a second tie, resolution of match is at the discretion of the judge. (Preference will given to the bot with the least negative points and penalty points.)
- h) If a bot becomes entangled disabled or stalled, the contestant may manually free the bot. 2 penalty points will be assessed for each said event. If both bots become entangled with each other, the contestants will manually return the bots to an area near their respective goals. They shall restart at the judge's signal. No penalties will be assessed. The match clock will keep running. If in the judges opinion one of the bots intentionally entangles the opposing bot the offending bot will be penalized.
6. **Contest Format** – If there are 4 or fewer contestants the contest shall be a round robin format. Otherwise the judges shall select a format be based on time available. Preferably round robin or double elimination (random draw).
7. **Control Contention.** – It is strongly recommended that bots have at least 2 frequencies of control to avoid control contention between competitors.
- a) In the event that 2 bots can not avoid control contention following steps will be taken.
    - 1. If the contest is in an elimination format, the judges will attempt to reassign the match brackets. If bots with control contention reach a final match or any match where the brackets can not be reassigned, the losers from the previous round will advance. That is to say the bots with control contention may be disqualified.
    - 2. If the contest is in round robin format both bots will be assigned a loss for any

match that they are unable to participate in due to control contention.

b) To avoid interference, no other bots shall be run while a match is in progress.

(end)

Resource notes:

<http://www.printyourbrackets.com/index.html> has contest format charts.