Robofest

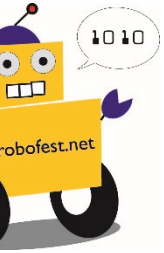
UMC

Unknown Mission Challenge

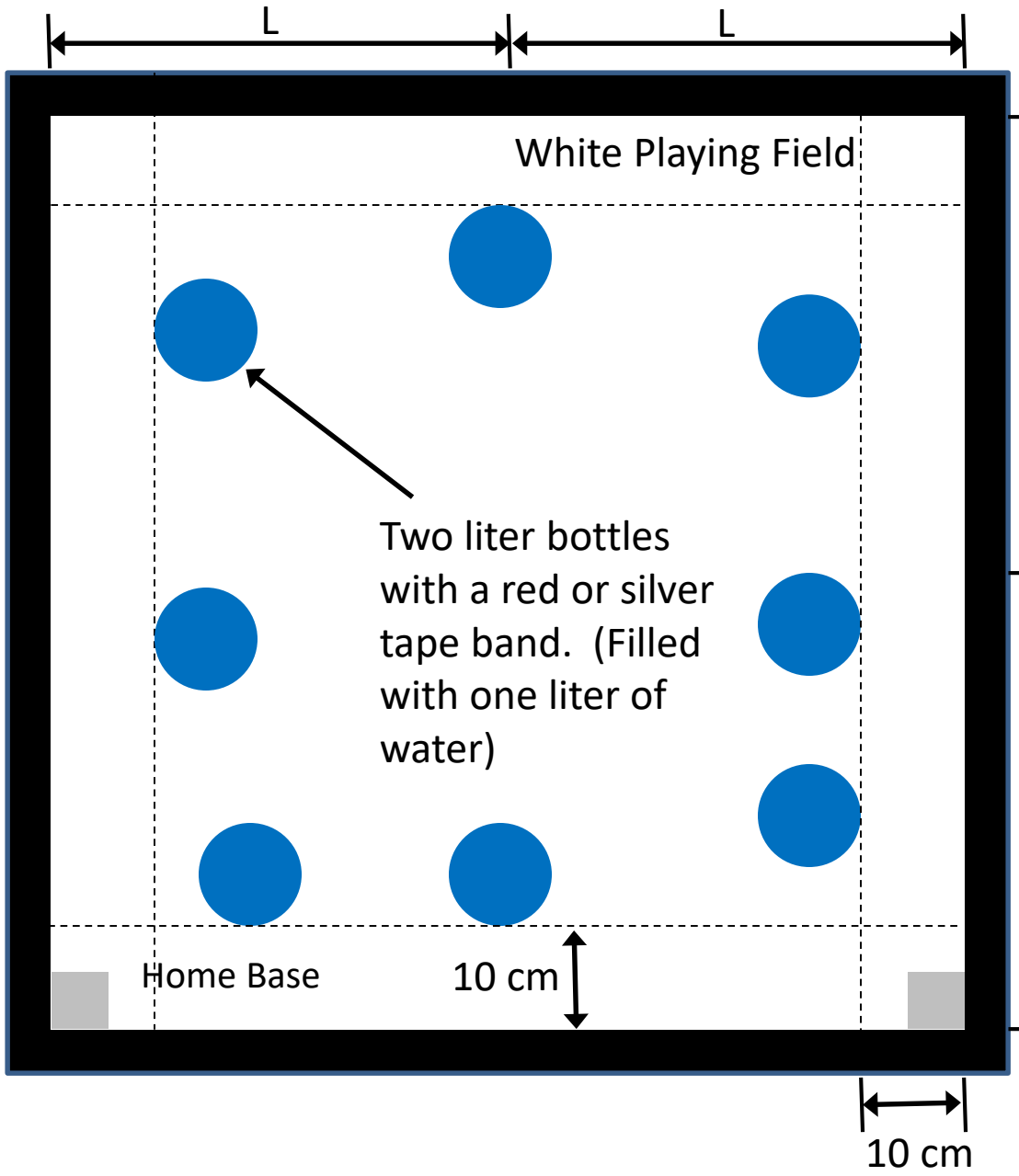
June 2, 2017

UMC Rules

- Pre-assembled robots cannot be used
- No sensor or motor multiplexors allowed
- Robots must complete the mission autonomously
- Maximum of three team members
- No communication with parents / coaches



UMC Today – Find and Report



Please note that the dashed lines will not be on the playing field. They indicate a 10cm gap between the edge of the field and bottles.

There may be a light circle in the middle of the playing field similar to the RoboHit game fields.

There is a 5 cm black border around playing field

UMC Today – Find and Report

Your robot must begin off the playing field adjacent to home base. The goal is to find the number of unknown bottles distributed randomly around the edge of the playing field. All bottles will be 10cm from the edge of the playing field. Please note that the bottles are wrapped with a band of red or silver tape. The robot is to locate, identify and count the water bottles and return to the home base.

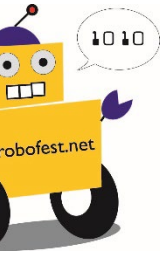
The robot many only be touched by the contestant to start the robot off the playing field. The robot cannot touch the bottles.

Time Limit = 2 minutes

Maximum Robot Size = 35 cm x 35 cm x 35 cm (for the entire run)

Values of L is known but set in the range shown below.

Variable	Min	Max
L	35 cm	60 cm



Additional Information

Start Zone/Home Base

- Contestants must start the robot off the playing field 5cm away from Home Base.

Identifying the Water Bottles

- The robot must indicate when it locates the water bottle to score points
  - For silver tape water bottles, the robot must play two, one-second long tones, with a one second rest between the tones
  - For black tape water bottles, the robot must play a single one-second tone
- The tone must be played with the robot at rest "close" to the water bottle
- If not tone is played, no points for correctly or incorrectly identifying the water bottle

Scoring

- Base points are awarded based on the number successful bottle identifications
- Each successfully identified silver tape bottle = 10 pts
- Each successfully identified red tape bottle = 5 pts
- Moving a water bottle or incorrectly identifying a water bottle = -2 pts
- If the robot does not end the run stopped over home base = -10 pts

End of Run Scoring Bonus = 25pts

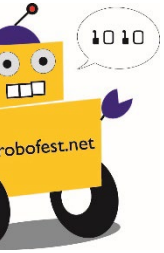
Junior Division

- Display the total number of water bottles observed during the game

Senior Division

- Report the base 10 representation of a binary encoding for the bottles:
  - Silver tape = 1
  - Red tape = 0

Bottle	1	2	3	4	…	n
Value	2^0	2^1	2^2	2^3	…	2^{n-1}



Scorecard

UMC 2017 - Find and Report				
Team Name:			Round 1	Round 2
Mission Variables			Points	Points
Number of silver tape bottles identified: 10 points per set of bottles Round 1: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 Round 2: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12				
Number of red tape bottles identified: 5 points per set of bottles Round 1: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 Round 2: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12				
Number of bottles incorrectly identified or moved: -2 points per set of bottles Round 1: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 Round 2: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12				
The robot does not end the run stopped over home base: -10 points				
Number/Encoding of silver bottles reported (25 points if matching)	Reported	Actual	Max (25)	
Number/Encoding of silver bottles reported (25 points if matching)	Reported	Actual		Max (25)
Total Score				
Final Score (Average score from Round 1 and 2)				

Competition Etiquette

- The practice tables are shared resources.
- Please split time on the practice tables – each team is limited to two minutes of table use if another team is waiting to use the table.
- Be careful moving around the competition area.
- Do not touch other teams' robots or resources.