



Beginner Category

Tug of War 2v2

Game Description, Rules, and Scoring

1. General Rules

1.1. Team

1. A team consists of two (2) members and/or one (1) coach.
2. Participants are categorized into two groups:
 - Junior (Elementary and Junior high school): Date of birth falls on/or after January 1, 2002 (in the period of January 1, 2002 to December 31, 2010).
 - Senior (Senior high school and above): Date of birth on/or before December 31, 2001.
3. Coaches may offer students advice and guidance prior to the competition, however during the actual Olympiad competition, all work and preparation must be performed by the student members of the team.

1.2. Material

1. The controllers, motors, and sensors used to assemble robots must be from LEGO® MINDSTORMS™ sets (NXT or EV3). Other LEGO branded elements may be used to construct the remaining parts of the robot.
2. The sets used are official LEGO Education sets. The committee will check warranty seal on the controller which indicates the sets are official LEGO Education set. Checking will be done prior to the start of competition. Participants may use non-Education sets with a penalty fee of Rp 500.000 per controller.
3. Teams should prepare and bring all the equipment, software and portable computers they need during the tournament.
4. The robots may be pre-built and programs pre-made.
5. Robots are not allowed to use screws, glues or tape to fasten any components. Non-compliance with these rules will result in disqualification.
6. Control software must be either NXT®, EV3 software, or LabVIEW.
7. The motors and the sensors for the robot are supplied by LEGO® and HiTechnic. Any other products are not allowed. Teams are not allowed to modify any original parts (for example: EV3, NXT, motors,

and sensors, etc). A robot made with modified parts will be disqualified at that match.

8. Teams may only use ABC ALKALINE AA batteries, no other battery may be used in the competition.



Eligible battery in the competition

1.2. Regulations about the Robot

1. Maximum dimension of the robot is 25x25x25 cm.
2. The robot is not allowed to change size after it starts.
3. The maximum weight of the robot is 1 kg, this includes the parts, batteries and cables.
4. Teams are allowed to use only one controller (NXT or EV3) for one robot.
5. The number of motors and sensors to be used is not restricted.
6. Any actions or movements by the participants are not allowed to interfere or assist the robot while it is running. Teams that violate this rule will be disqualified at that match.
7. Any radio communication, remote control and wired control systems are not allowed while the robot is running. Teams in violation of this rule may be disqualified and must quit the competition immediately.
8. The Bluetooth and Wi-Fi function must be switched off at all times.

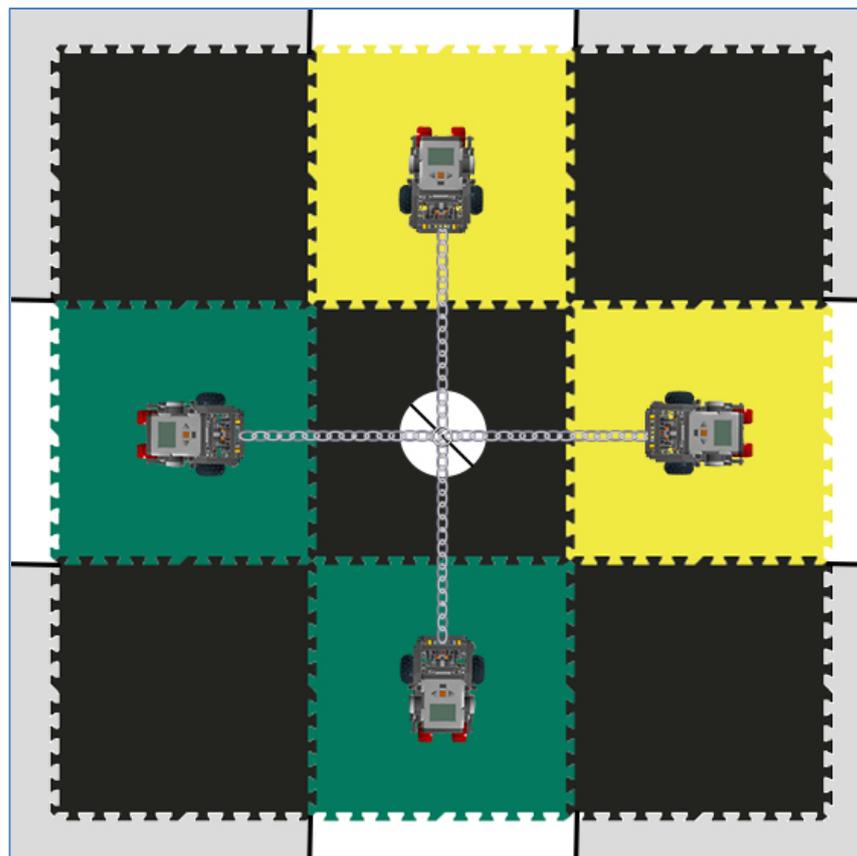
2. Challenge

2.1. Overview

The objective of this game is to pull the other team's robot. Two robots from each team are placed opposite of the other team's robot and will pull the other team's robot while they are connected with a chain.

2.2. Description

1. Each team consists of two separate robots.
2. The competition arena is a square which consist of 9 smaller square tile, with 2 green tiles and 2 yellow tiles.



Please note that the Grey areas are empty

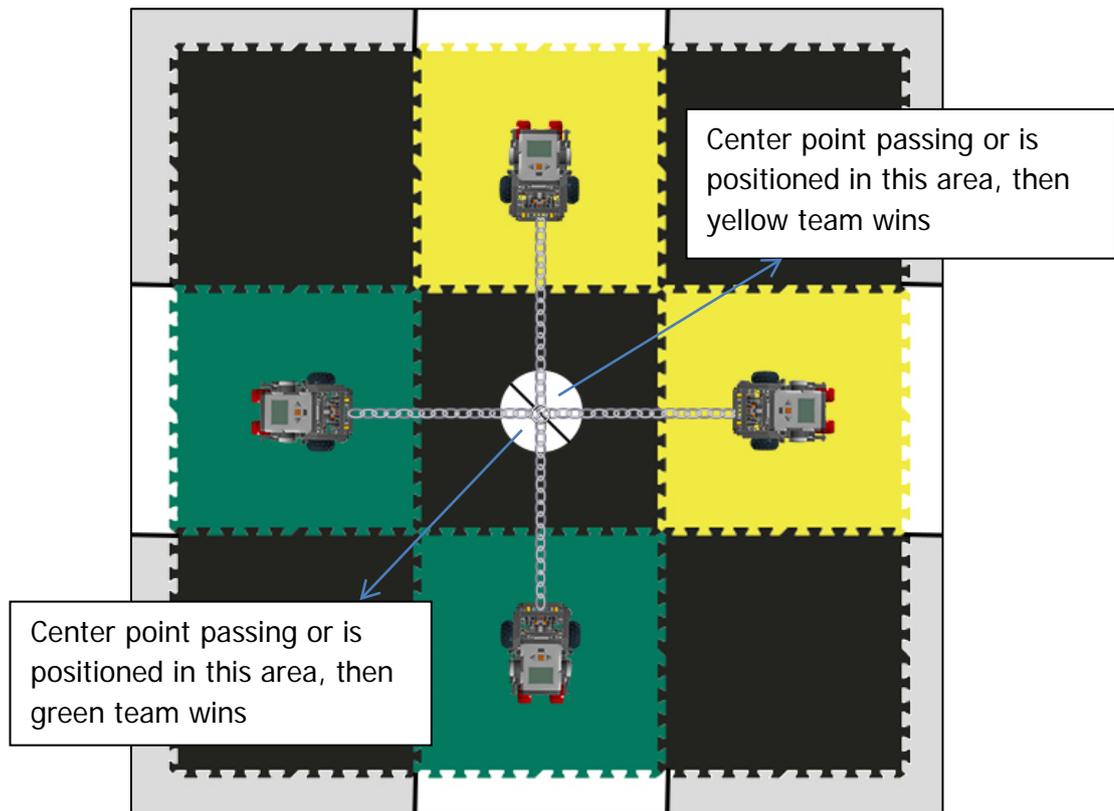
3. The 4 colored tiles show the position where a team's robot may be placed. Robots of the same team can only be placed in the same colored tile. For example, both team A's robots in yellow tile and both team B's robots in green tile.
4. A white circle in the middle of the arena (20 cm diameter) marks the

center of the playing field.

5. The 4 robots will be connected through a 4-sided chain. Before the match is started, the judge will hold the center of the chain at the center of the white circle.

2.3. Rules and Regulation

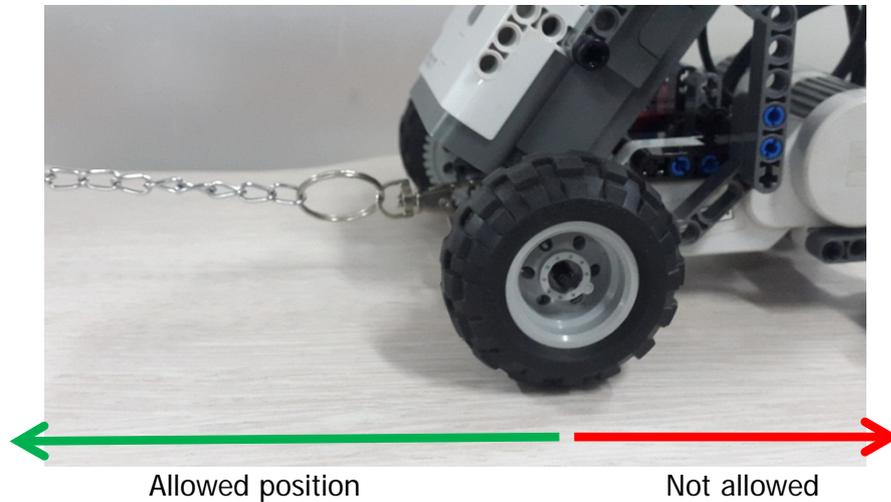
1. Before a match is started, judge will give time for both team to prepare their robots in their position. When robots are ready in their position, judge will signal the teams to run the program on their robots before the round starts (when the round starts, all program on the robots are already being "run")
2. After all robots are ready, judges will start the countdown to start the round while holding the middle point of the chains right above the centre of the white circle on the game mat. When countdown ends, judge will release the middle point of chains and the round starts.
3. The maximum time for a match is 30 seconds.
4. A team is considered to have won a match if:
 - The center of the chain has moved completely outside of the middle circle. Team who is able to pull the center of the chain to their side of the arena is the winner of that round.
 - Time limit of 30 seconds is reached and team who is able to pull the center of the chain towards their side of the arena is the winner.



5. Each team's robots must provide an axle for the hook to grab upon. Other parts may be used as long as the hook can grab the part fully. Each team is responsible for the sturdiness of this part. If the tension from being pulled by the other robot caused a robot to be detached from the parts connected to the hook, then the team is considered to have lost the match.
6. The height of the part attached to the hook has must be at minimum 2 studs high from the ground and maximum 4 studs high from the ground.



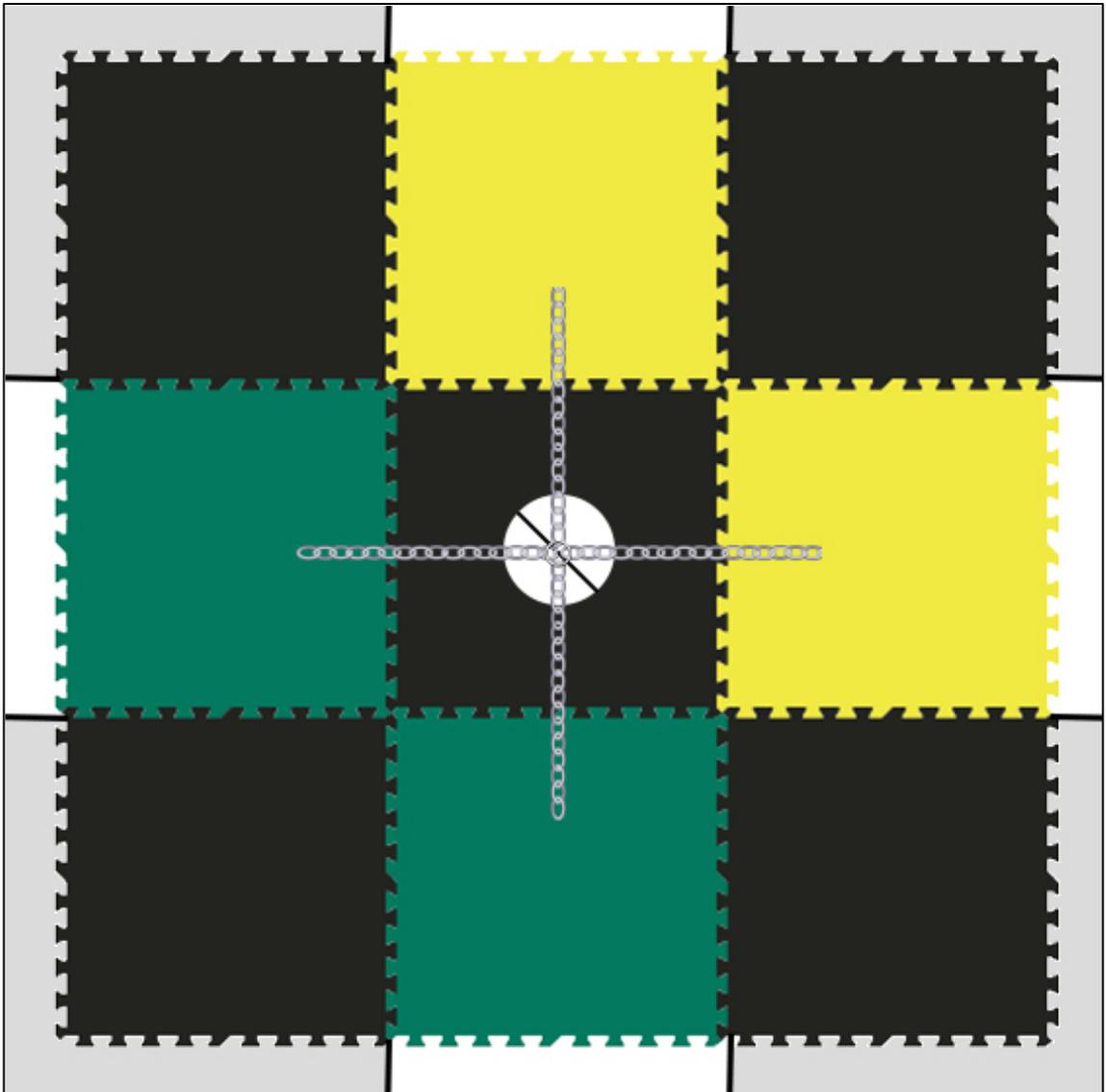
7. The position of the connecting axle must not be further inside the robot's body compared to the outer most part of the robot which is touching the ground (ex: wheel). As an example, look at the illustration below:



8. Teams may place their robot at any position as long as they are within the designated tile.
9. Any parts or robot behavior which may damage the playing field is highly prohibited. Any clear violation to this regulation will result in the teams' disqualification from the competition.

3. Specification

3.1. Playing Field



1. The playing field is made of 9 Soft Tiles (size 2 foot / 60.96 cm). The surrounding white borders add 2.125 inch / 5.4 cm. Full size of the mat is 198.12 cm.
2. The tiles used are 5 black 2x2, 2 Yellow 2x2, 2 Green 2x2, and 4 White Side Border. Details on soft tiles mat can be found at <https://www.softtiles.com/>.
3. The white circle in the middle is 20 cm in diameter. A black line aligned diagonally to the arena split the circle in two sides for each team.

3.2. Chain and Hook

1. The length of each branch of the chain ± 40 cm. Example of the chain and the hook can be seen in the image below:



2. Example of the hook that connect the chain with the robot can be seen in the image below:

