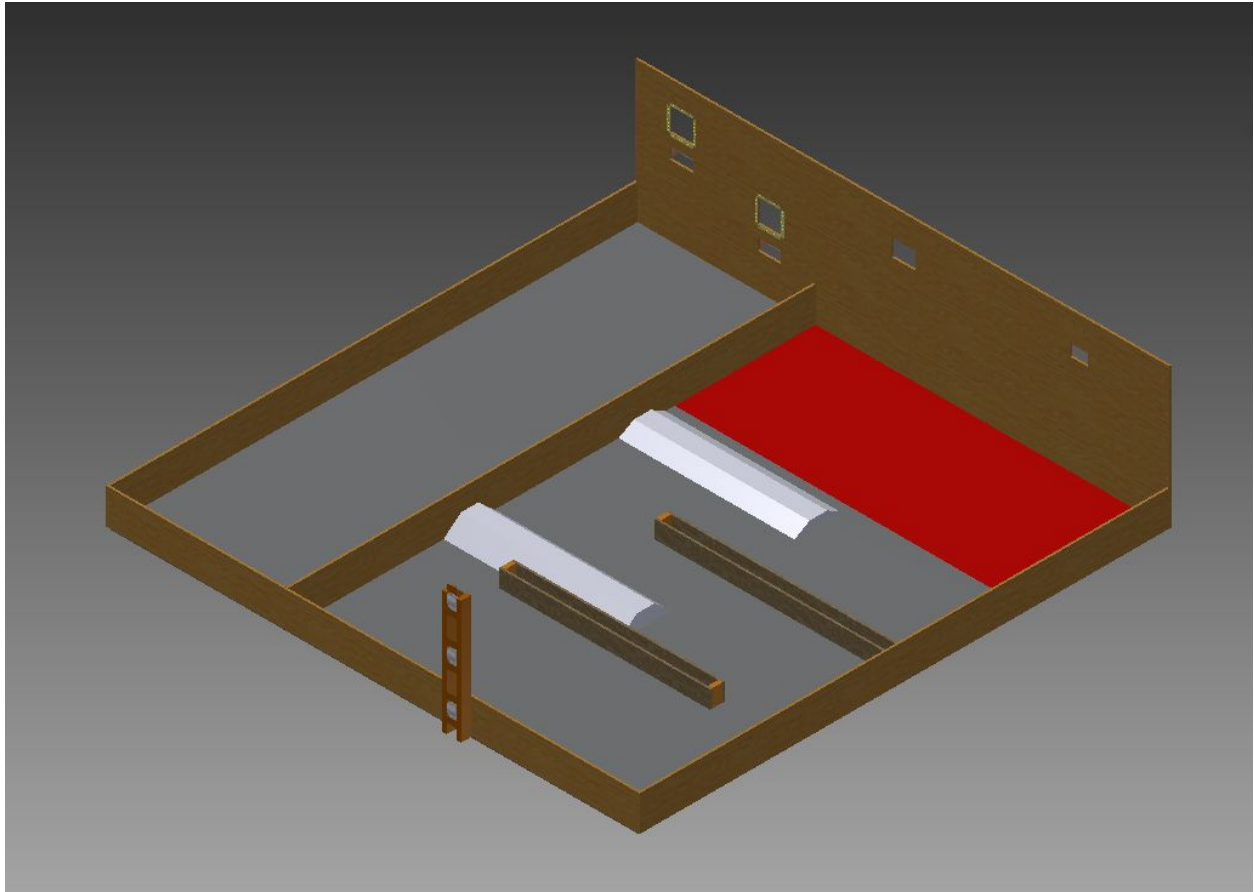


TRIPLE TENNIS TROUBLE



1. INTRODUCTION

1.1 GAME SUMMARY

TRIPLE TENNIS TROUBLE is a tennis-themed game designed for the 2015-2016 TechHOUNDS Robotics Preseason. It is played by one (1) stationary, autonomous robot (AUTON) competing against one (1) teleoperated robot (TELEOP) to score TENNIS BALLS into GOALS. The AUTON robot and TELEOP robot compete on different, side-by-side FIELDS with different field sizes, GOALS, and scoring mechanisms.

The AUTON robot competes on a 5' by 15' FIELD and is placed 12' away from the GOALS. It is preloaded with up to thirty (30) TENNIS BALLS that can be shot into two (2) GOALS.

TENNIS BALLS can be shot no faster than once every six (6) seconds.

The TELEOP robot competes on a 10' by 15' FIELD. Human drivers take the controls to load TENNIS BALLS from the FEEDER STATION and score them into two (2) GOALS on the opposite side of the FIELD. A maximum of three (3) TENNIS BALLS can be in the TELEOP robot at any given time.

Each TRIPLE TENNIS TROUBLE match is exactly three (3) minutes long. The intent of the game is to score as many TENNIS BALLS into GOALS as quickly and accurately as possible.

2. ARENA

2.1 AUTON FIELD & SCORING

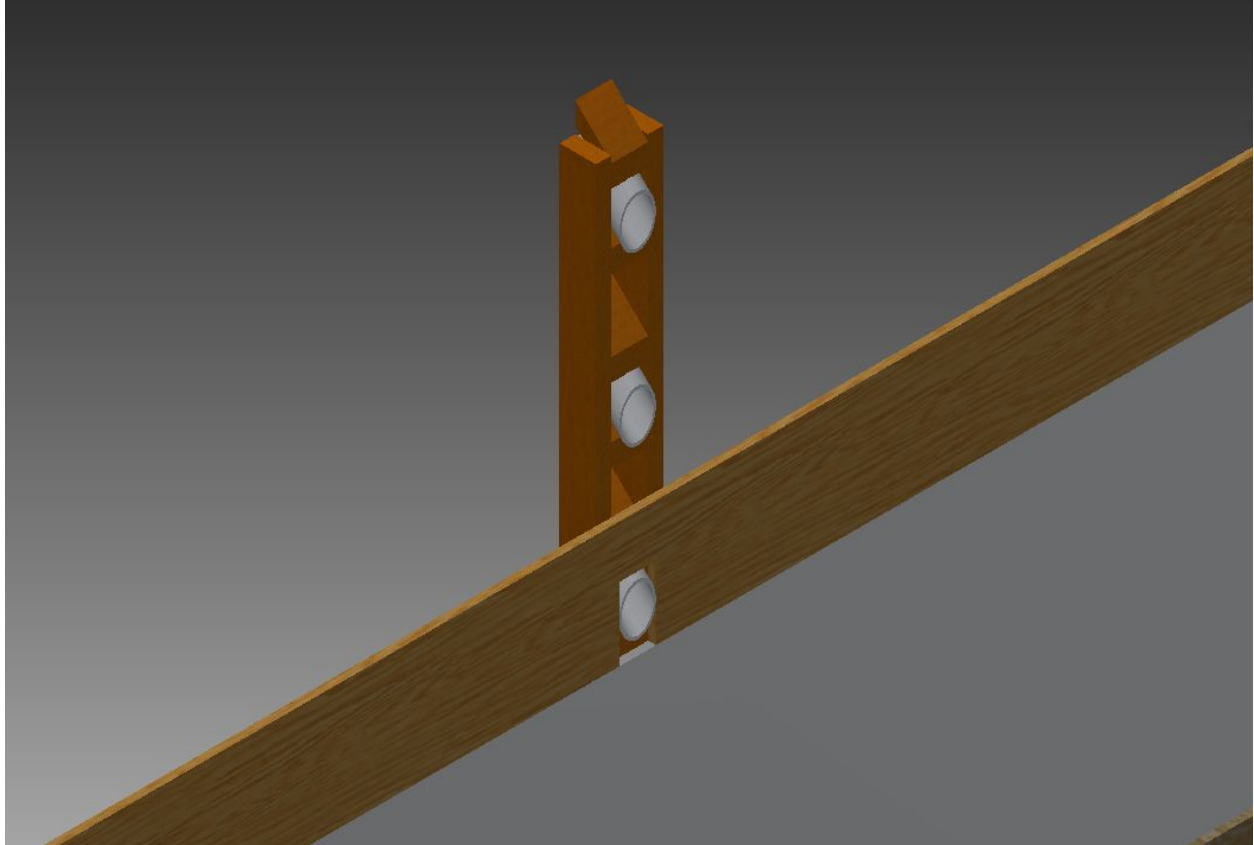
The AUTON robot competes on a 5' by 15' FIELD. The BACK (5' long) and two (2) SIDES (15' long) are made of 1' tall planks. The FRONT of the AUTON robot is placed exactly 12' away from the FRONT of the FIELD.

At the FRONT of the FIELD, there are two (2) GOALS with dimensions 8" x 8" in a 4' high by 5' long plank. The center of the left GOALS is at 3' high and 15" from the left SIDE of the FIELD, and the center of the right GOALS is at 2' high and 15" from the right SIDE of the FIELD. Each GOAL has a string of LED's around its perimeter and a rotating panel of retro-reflective tape immediately below it. When these indicators are activated, the LED's will turn on, and the rotation panel will rotate so the retro-reflective tape is facing the ROBOT. Every six (6) seconds, the indicators around one (1) of the GOALS will randomly turn ON, indicating the GOAL is HOT. After three (3) seconds, the indicators will turn OFF, but the GOAL will remain HOT until the next six (6) second period. Below is the scoring system for the GOALS.

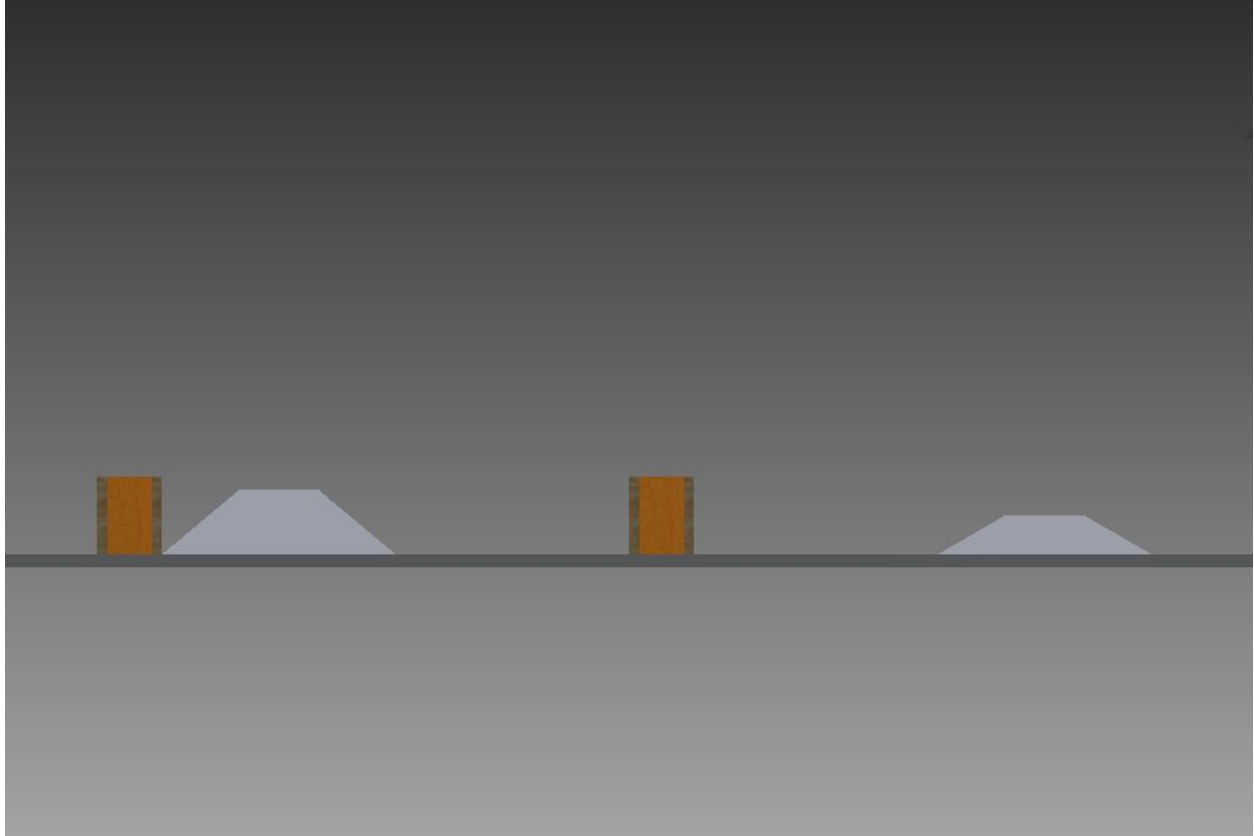
Goal Type – AUTON	Points Scored
HOT	5
NOT HOT	3

2.2 TELEOP FIELD & SCORING

The TELEOP robot competes on a 10' by 15' FIELD. The intent of the TELEOP robot is to transport TENNIS BALLS (collected from the FEEDER STATION at the BACK of the FIELD) to GOALS at the FRONT of the FIELD. Each SIDE (15' long) is made of a 1' tall plank. The BACK (10' long) is made of a 1' tall plank. In the center of the BACK wall, a 6" long X 3.5' tall structure extends upward. At 0', 2', and 3' high, 3" holes are surrounded by a PVC hole to create the FEEDER STATION. The HUMAN PLAYER can load up to three (3) TENNIS BALLS through any of the three holes into the robot. See diagram below.



In the middle of the FIELD, there are two (2) WALLS and two (2) BUMPS. The WALLS are 1" wide by 6' long by 1' tall. TELEOP robots may not go over WALLS. The BUMPS are designed to be 6' long, similar to a speed bump. However, these BUMPS have angular sides (30 degrees), each leading to a flat platform 6" long and 3" off the ground. The total length of the base of a BUMP is 16.39" long. TELEOP robots are permitted to travel over the BUMPS. See the diagram below.



At the FRONT of the FIELD, there are two scoring GOALS with dimensions 4" X 6" and 6" X 8" within a 4' by 10' plank (the FRONT). The center of each GOAL is at a height of 3'. The center of 4" X 6" GOAL is 30" from the right SIDE of the FIELD, while the center of the 6" by 8" GOAL is 30" from the left SIDE of the FIELD. TELEOP robots can score the TENNIS BALLS in either GOAL. GOAL scoring below:

GOAL Type – TELEOP	Points
4" X 6"	6
6" X 8"	4

TELEOP robots can possess a maximum of three (3) TENNIS BALLS at one time.

3. THE GAME

3.1 Overview

3.1.1 MATCH Timing

A MATCH is three (3) minutes long.

3.2 Game Rules

3.2.1 Safety

G1 ROBOTS whose operation or design is dangerous or unsafe are not permitted.

G2 DRIVE TEAMS may only enter the FIELD when instructed to do so

G3 DRIVE TEAMS may not extend any body part into the FIELD during the MATCH

3.2.5 ROBOT Actions

G21 ROBOTS may not extend beyond 3' in height at any time.

G22 ROBOTS may not extend more than 6 in. from the ROBOT at any time. This is measured parallel to the plane of the base of the ROBOT.

G23 ROBOTS may not cause TENNIS BALLS to completely leave the FIELD.

G24 ROBOTS may not cause TENNIS BALLS to completely cross over the center divider.

G25 ROBOTS may not intentionally detach or leave parts on the FIELD.

G27 ROBOTS may not extend outside of the FIELD.

G28 ROBOTS may not possess more than three (3) TENNIS BALLS simultaneously.

4 THE ROBOT

4.1 Overview

All materials will be provided from existing TechHOUNDS supplies. Additional supplies may be ordered upon request.

4.2 General ROBOT Design

R3 The ROBOT must satisfy the following size constraints:

A. The ROBOT must start a MATCH in a configuration that does not exceed 18 in. wide, 18 in. long, and 16 in. tall.

B. The ROBOT weight may not exceed 80 lbs. When determining the weight, the battery is not included.

Safety & Damage Prevention

R7 Protrusions from the ROBOT and exposed surfaces on the ROBOT shall not pose hazards to the ARENA elements or people.

R8 ROBOT parts shall not be made from hazardous materials, be unsafe, cause an unsafe condition, or interfere with the operation of other ROBOTS.