



2016
IRAN
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AUTCUP
International Robotics Competitions



Shooting

• Explanatory Guide

In the name of Allah

HUMANOID ROBOTS SHOOTING LEAGUE RULE BOOK AND SETUP

FOR THE 2016 AMIRKABIR INTERNATIONAL ROBOTIC COMPETITIONS

LEAGUE TECHNICAL COMMITTEE

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Preamble

Shooting is the act or process of discharging firearms or other projectile weapons such as bows or crossbows. Even the firing of artillery, rockets, and missiles can be called shooting. A person who specializes in shooting is a marksman. Shooting can take place in a shooting range or in the field in hunting, in shooting sports, or in combat.

A shooting sport is a competitive sport involving tests of proficiency (accuracy and speed) using various types of guns such as firearms and air guns. Hunting is also a shooting sport and shooting live pigeons was an event in the 1900 Olympic Games. The shooting sports are categorized by the type of firearm, targets, and distances at which the targets are shot.

Article 1: Arena

1. Descriptions

- I. The competitions take place on (3×1.5 m) field.

2. Floor

- I. The field consists of a flat and even ground which is covered with green carpet
- II. The white lines are 5cm wide.
- III. The field is surrounded by a border strip which is also covered with green carpet.
- IV. The world outside of the border is undefined.

3. Must comply with the following rules

- I. The area designated as square and all distances should be carefully measured from point below the yellow circle of each face up to the fire line.
- II. The permissible error in distance 110/100/90 is plus or minus 3cm and in distance 80/70/60 is plus or minus 1.5cm.
- III. The robots should stand behind the fire line which is a white line (width: 5cm) is in distance of at least 30cm.
- IV. Each of the shooting targets place at an angle between 10 to 15 degrees from perpendicular but all pages in the same line should be in a same angle enjoy.
- V. In the challenge, the shooting target may be used for plenty of times in different times.
- VI. Shooting target is a circle with a radius of 15cm (Figure 1).
- VII. Separating part of the target areas is some circles with black lines with a thickness of 0.5cm.
- VIII. The height of the center of the target is variable based on the total height of the robot from the ground. The target height will be selected while the center point of the target is collided with the robot's extended arm, parallel to the ground.

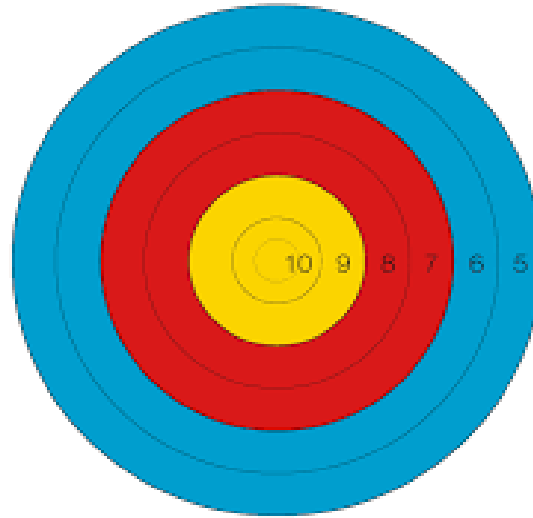


Figure 1 target face

Article 2: Robots

1. Robot Controlling Methods

- I. Robots must be controlled manually in junior leagues.
- II. Robots must be controlled tele-operate or autonomously in major leagues.
- III. Robots must be started manually by the team handler.
- IV. A robot must not damage any part of the arena in anyway.
- V. Robots should include an emergency stop/pause button so they may be easily stopped/paused by humans to avert any potentially damaging or illegal robot actions.

Article 3: Play

1. Pre-round Practice

Participants will have an access to the competition fields for the robot's calibration, testing and tuning, throughout the competition in the proper time, based on the referee's and technical committee decisions.

2. Start of Play

- I. Once the scoring round has begun, the playing robot is not permitted to leave the competition area for any reason.
- II. Once the time starts, a team may calibrate their robot in any locations in the field, but the time will continue to count down.
- III. Once a scoring round has begun, no more calibration is permitted (this includes changing of code/code selection).

Article 4: The competition

- I. At the beginning of the challenge, robots must stay behind the waiting line for the referee start permission.
- II. Based on the number of teams and technical committee's decision, the number of rounds can be changed.
- III. The duration of each round is 10 minutes and during this time the robot has three opportunities to shoot at the target.
- IV. At the end of each round, the best score will be recorded by the referees
- V. The distance between waiting line and fire line is 30cm.
- VI. Robot within 30 seconds after the referee's permission should go from waiting line to the fire line.
- VII. The purpose of robot for shooting is the target located at a distance of 2.5m.
- VIII. Before the kick-off, the referee will give a laser device to the teams that must be placed on the robot arm.
- IX. After focusing on the target, the robot must remain constant until the laser will be turned on by the referee then the scores recorded.