



Humanoid Sprint

Competition Idea: [robotchallenge.org](http://www.robotchallenge.org)

1. General

1.1. Field

- 1.1.1. The field is a track enclosed with borders from both sides.
- 1.1.2. Field color – random.
- 1.1.3. Border color – random.
- 1.1.4. Track width – not less than 70 mm.
- 1.1.5. Border height – 20 cm.
- 1.1.6. Start-to-finish distance – 200 cm.

2. Robot requirements

2.1. Basic specifications

- 2.1.1. A robot is a two-legged walking humanoid capable of moving its center of mass in order to maintain balance while walking.
- 2.1.2. When walking, the balancing foot's joint angle must exceed 90 degrees.
- 2.1.3. If this requirement is violated at any moment, the robot will not be considered walking anymore.
- 2.1.4. The feet may be of any length and form, provided the following requirements are adhered to:
 - A robot foot is its integral part contacting the floor surface.
 - The maximum length (size) of a foot must be less than 50% of its overall leg length. The leg size is determined by the distance from the foot/floor contact point to the leg/upper body coupling point.
 - The maximum foot length must be less than 20 cm.
- 2.1.5. When a robot stands still or walks, the left and right feet contours must not overlap each other.
- 2.1.6. A robot must have 2 hands. Each hand's length must not exceed the overall leg length.
- 2.1.7. The robot must have a head.

3. Game

3.1. Game goal

- 3.1.1. A robot must cover the start-to-finish distance within the shortest possible time.
- 3.1.2. The total task completion time must not exceed 3 minutes.

3.2. Start

- 3.2.1. During the start, all parts of a robot must be located behind the start line.
- 3.2.2. The robot must be turned on or initialized manually upon command of a judge at the competition start, after which no interference into its operation is allowed. Remote control and commanding the robot are prohibited.
- 3.2.3. During the competition, competitors are not allowed to touch the robot's body or the polygon.



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3.3. Finish

- 3.3.1. The task is ended upon command of a judge after a robot crosses¹ the finish line.
- 3.3.2. The judge may as well decide for an early termination of a try.

3.4. Task execution termination

- 3.4.1. Task execution may be halted and the timer may be stopped in the following situations:
 - If any team member touches the robot body
 - If the robot falls and does not stand up in 10 seconds
 - If the finish conditions are fulfilled (see Paragraph 3.3)
 - If the competition protocol is violated
 - If the task time elapsed.

4. Winner selection method

- 4.1. Each team is given at least two tries (the exact number is defined by the judging panel on the competition day).
- 4.2. The time of the best try is counted.
- 4.3. The team is considered the winner if:
 - 4.3.1. Their robot has covered the start-to-finish distance in the shortest time
 - 4.3.2. Their robot has covered the longest distance².

¹ A robot is considered as having crossed the line, if the better part of its body is located behind it.

² In case none of the robots have finished.