

\* **General Rule:** Please check the general rule first before read this rule. General rule take precedence over any rules.

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## 1. Game Description

Participants are required to design, construct, and present their robots according to theme presented by IROC. There are no limitations on material or size, so participants can express their imagination freely. **This game is conducted face-to-face or non-face-to-face.**

## 2. Robot rule

### 2-1. Robot type

There is no restriction on robot type or material, but anything that may pose a threat to other people is prohibited.

### 2-2. Robot size

Size of the robot must be able to be presented in given size of the area, participants take full responsibility of disadvantages occurred by size of the robot

### 2-3. Construction condition: Construction condition is organized differently depending on face-to-face or non-face progress.

**Face-to-face :** Software, Props, background, or controller can be pre-made, but other parts of robot should be built on-site.

**Non-face-to-face :** Software, Props, background and all parts of robot can be pre-made. For presentation, a device capable of "Zoom" video calls should be set up on a tripod to make the presenter and production visible.

### 2-4. Power source: No restriction

### 2-5. Operation: Robots should work with an independent electric power supply; it cannot use a combustible device.

2-5-1. Robots must act according to participants' intention. Participants declare at the start of the demonstration all the tasks the robot will perform. Then they proceed by demonstrating each of the tasks. The robot will be evaluated based on its successful performance of the task.

2-5-2. Example of failure (Not matching to participant's intention)

2-5-2-1. Walking robot that cannot walk

2-5-2-2. Washing robot that cannot wash.

2-5-2-3. Climbing robot that cannot climb

## 3. Playfield Regulation

### 3-1. Playfield: Playfield is organized differently depending on face-to-face or non-face progress.

**Face-to-face :** There is no special playfield, but each team is given table size of 1,800mm x 600mm, and they can utilize area around table while not disrupting other teams. Table size can be altered in the future

**Non-face-to-face :** There is no special playfield. It can be made in any space.



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## 4. Competition

### 4-1. Main Theme

It will be announced on homepage at least end of May of that year.

4-1-1. Main Theme in 2021

### Social Robot

### 4-2. A national preliminary round

If you (or your country) have a national preliminary round, round will be conducted online, participants will send their UCC of production plan. only participants who passed that round can go to the final round. Please refer to the below.

4-2-1. Each team prepares a 1-minute UCC clip which is < 200 MB, 1280 x720 resolution, in AVI or WMV format. This video will be submitted during the national preliminary round or during a date specified by the national partner of IRO. The video contains the following information:

- a) Purpose of the project
- b) Demonstration of the functions and quality of the robot
- c) Cost of the robot
- d) The help received by the team when making the robot

4-2-2. The limit of capacity for production plan must be less than 200MB. If exceeds the limit, 10 point will be deducted

4-2-3. The resolution has to be 1280x720, if failed to follow, 10 point will be deducted.

4-2-4. Format of the file has to be AVI, WMV, **MP4** (other formats are not allowed)

4-2-5. Name of the file, Name of the school, Name of the participant.

4-2-6. Name of the file has to be same as the title.

**4-3. Competition will be held for 2 days in the stadium and robot will be constructed on-site and will be questioned by judges. The result will be uploaded on the website.**

### 4-4. First day(Face-to-face)

4-4-1. Construction time of the robot is total 5 hours. (Except lunch time)

4-4-2. Judges can freely request or ask questions while constructing the robot, if participant shows insincerity during inquires, points can be deducted.

4-4-3. Points will be deducted for participant whom with insincere attitude toward the competition.

4-4-4. All teams should finish constructing the robot in given time. If time is over the point will be deducted based on the table below.

<Deduction of exceeding time>

Time	5min	10 min	15 min	20 min	25 min	Over 30 min
Point	-1 pt	-2 pt	-3 pt	-4 pt	-5 pt	-6 pt

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#### **4-5. Second day(Face-to-face)**

- 4-5-1. Judges will move randomly during presentation to evaluate skills and function of robot.
- 4-5-2. Modification and repair of the robot is prohibited while presenting. Except inevitable situations such as damaging of robot, running out of battery. Judges or organizers can authorize to repair the robot.
- 4-5-3. Judges can freely request or ask questions during presentation of the robot, if participant shows insincerity during inquires, points can be deducted.
- 4-5-4. Points will be deducted for participant whom with insincere attitude toward the competition.
- 4-5-5. All teams can present their robots to general public.

#### **4-6. Paper evaluation(Face-to-face)**

In final stage, teams will undergo a written evaluation during the contest. Participants will be tested either on first day or second day. If evaluation is conducted on first day.

#### **4-7. First day(Non-face-to-face)**

- 4-7-1. Construction time of the robot is total 1days. (Detail schedule will be upload on website)
- 4-7-2. The presentation shall be held on the second day, and the order of presentation shall be determined by the lottery of the judges. (Notice website of lottery results)
- 4-7-3. Points will be deducted for participant whom with insincere attitude toward the competition.
- 4-7-4. All teams should finish constructing the robot in given time. If time is over the point will be deducted based on the table below.

<Deduction of exceeding time>

Time	5min	10 min	15 min	20 min	25 min	Over 30 min
Point	-1 pt	-2 pt	-3 pt	-4 pt	-5 pt	-6 pt

#### **4-8. Second day(Non-face-to-face)**

- 4-8-1. When presenting students, the judges grade their presentation ability and movement based on the order of lottery. If there is a delay in announcing a video call, it will be pushed back to the next step.
- 4-8-2. Modification and repair of the robot is prohibited while presenting. Except inevitable situations such as damaging of robot, running out of battery. Judges or organizers can authorize to repair the robot.
- 4-8-3. Judges can freely request or ask questions during presentation of the robot, if participant shows insincerity during inquires, points can be deducted.
- 4-8-4. Points will be deducted for participant whom with insincere attitude toward the competition.
- 4-8-5. All teams can present their robots to general public.

#### **4-9. Paper evaluation(Non-face-to-face)**

In final stage, teams will undergo a written evaluation during the contest. Participants will be tested either on first day or second day. If evaluation is conducted on first day.

Participants can improve their work on the second day. Also rule of 4-8-5 will be applied.

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## 5. Evaluation and Rank decision

### 5-1. Evaluation criteria

Judges will evaluate according to below criteria, and will sum up the points to decide.

Evaluation criteria is organized differently depending on face-to-face or non-face progress.

#### final rank.(Face-to-face)

Construction (60 pts)			Presentation (20 pts)	Research (20 pts)
Creativity of robot	Cooperative problem solving	Completeness of appropriate theme	Robot presentation and explanation	On-site creatively evaluation (Regarding to 4-6. Paper evaluation)
6/12/18/24/30	4/8/12/16/20	2/4/6/8/10	4/8/12/16/20	4/8/12/16/20

#### final rank.(Non-face-to-face)

Construction (20 pts)		Presentation (60 pts)			Research (20 pts)
Creativity of robot	Completeness of appropriate theme	Cooperative problem solving	Robot presentation and explanation	Technical Understanding	On-site creatively evaluation (Regarding to 4-9. Paper evaluation)
2/4/6/8/10	2/4/6/8/10	2/4/6/8/10	4/8/12/16/20	6/12/18/24/30	4/8/12/16/20

**5-1-1. When aggregating the score, the highest and lowest scores are excluded from the final score.**

### 5-2. Draw

If points are draw, rank will be decided by the following.

5-2-1. No.1: Result with no deductive point will have higher rank than below

5-2-2. No.2: Result with more functionality over cost point will have higher rank

5-2-3. No.3: Result with more cooperative problem solution point will have higher rank than below

5-2-4. No.4: A team with younger average age of team members will have higher rank than below

5-2-5. No.5: Result with more creativity point will have higher rank than below

5-2-6. No.6: Result with more presentation point will have higher rank than below

5-2-7. No.7: Result with more completeness point will have higher rank than below

