RoboChallenge

MRSM 2023

Creative IOT Category

"The Olympics"

iROC CREATIVE IOT

1. **Objective**

   The creative category provides an opportunity for students to give free rein to their creativity, to acquire science and engineering knowledge and to apply practical skills on the given theme. Participant needs to identify areas in which robotics may be used and develop a robotics solution that fulfils the theme and present it according to the rules of the creative category competition in IRO 2023.

2. **Theme**

   "The Olympics"

3. **League**

   Open microcontroller robot integrated with IoT.

   What is IoT?

   The IoT brings internet connectivity, data processing and analytics to the world of physical objects.

   IoT devices share the sensor data they collect by connecting to an IoT gateway or other edge device where data is either sent to the cloud to be analyzed or analyzed locally.

4. **Team**

   One team per college - Two person per team

5. **Venue**

   Preliminary round   : at the respective MRSM (online)

   Final   : MRSM Bentong (onsite)

6. **Game method**

   All team submit a video of project and **20 best projects** will be finalised and proceed to the final round.

   Preliminary round
   - video submission   : 23rd June 2023
   - list of top 20 projects release : 03rd July 2023

Final round   : 21st - 24th July 2023

Part 1: Construction test

Part 2: Presentation

7. Rules and Regulations

7.1   Online Rules

7.1.1 Preliminary round – video submission for top 20 selection

The teams must submit their video presentation of their robot (must include robot demonstration)

Video duration **3 minutes maximum**.

The teams **must upload the link** to the video only. Save the video in drive. Copy the link then upload it. Make sure the link is **not private**. Link for the submission will be provided by the host.

Video presentation must explain the following:

- Purpose of the project
- Demonstration of the functions and quality of the robot including integrated IOT.
- The help received by the team when making the robot.

7.2   Onsite Rules

7.2.1 Robot Construction test (5 hour)

Each team is allowed to use any microcontroller as the main controller which is available in the market. **The robot must have IOT functionality. The robot have interaction with other devices such as computer, smartphone, cloud via Bluetooth or wifi to collect data. Using Bluetooth as a remote control is not considered as IOT**.

Example of IOT devices to attach with robot are ESP32, ESP8266, Arduino with wifi module, Rasberry Pi, NODEMCU8266.

Any open robotic controller no matter whether it is custom made or that is available in the market or the combination of both as long as each robot complies with the MRSM Robo Challenge rules and regulation for creative category.

At the initial phase, **all loose parts must be dismantled**. The teams are given 5 hours to build the robot or prepare the controlling parts and complete their robot construction without assistance from other people. The judges will be around during the construction time to evaluate or question the team's work. Evaluation of the projects focuses on the following aspects:

- Mechanical Concept
- Planning procedure
- Technical Implementation
- Operation Quality
- Understanding Robot Principle
- Critical Thinking
- Teamwork

The teams must abide to the following rules:

i. Only the participating team's members can enter the designated game area. If persons that are not registered are found in the game area the team related with the person will be disqualified

ii. The robot must be constructed in 5 hours, preassemble robots are not allowed. However, a processor module for robot control is allowed.

iii. The use of dangerous and polluting materials and operations are not allowed.

iv. Each team must bring its own materials and tools for building the robot. Electric tools are allowed; however, the electric instrument should have self-regulation power.

v. Teams are allowed to bring own computer for programming.

vi. The size of the whole project, including the booth decoration must not exceed 2 meters (L) x 2 meters (W).

   *The size of the area can be changed due to situation.

vii. The team may decorate the booth with maximum 2 bunting (size 2" (W) x 5"(L) or power point presentation. **Bunting stand and LCD are not provided by the host**. [Optional]

7.2.2   Robot Presentation

The teams are given 8 minutes (5 minutes for oral presentation and 3 minutes for Q&A) to present their project in English. Team will operate their robots and show its functions. Teams are allowed to show a video of the robot that previously recorded.

Robot modification or repair is not allowed during presentation. However, if robot part is damaged or battery runs out, judges can authorize repair of robot.

When evaluating the presentation, the judges will look for these aspects:

- Understanding Robot Concepts
- Level of Solving problems
- Clear presentation
- Originality and Quality
- Teamwork and team management
- Future Research and Robot Knowledge
- Prop

7.3 Overall evaluation rubric

7.3.1 Online rubric

Aspect	Rubric	Score				
Video	Creativity of robot (30%)	6	12	18	24	30
	Technology & Functionality of the robot (20%)	4	8	12	16	20
	Completeness of appropriate Theme (10%)	2	4	6	8	10
	Robot Introduction & Explanation (20%)	4	8	12	16	20
	Communication skill (20%) - Cinematography of video	4	8	12	16	20

7.3.2   Onsite rubric

Aspect	Rubric	Score				
	Creativity of robot - Mechanical concept, planning procedure, operation quality, originality	6	12	18	24	30
Construction (80%)	Technology and functionality of robot - System integrated with IOT functionality	4	8	12	16	20
	Cooperative problem solution - Technical Implementation, Critical Thinking	4	8	12	16	20
	Completeness of appropriate theme - Understanding robot principle	2	4	6	8	10
Presentation (20%)	Robot introduction & explanation	4	8	12	16	20

*Presentation must be delivered fully in English; thus colleges are advice to make sure the presenter are able to communicate in English.

Q&A session done by judges will also be conducted in English.

Should you require any additional information, please refer to the Person In Charge (PIC) as follows:
-        Norfadilah bt Mohd (012-9854958) (norfadilah.mohd@mara.gov.my)
-        Nur 'Atikah bt Ismail (017-3700680)(n.atikah@mara.gov.my)