



## **Robotics Category- Challenge Overview- Preliminary/ Finals**

A hurricane has just devastated the island of St. Vincent and the Grenadines.

Participants are tasked to design, build, and program a robot to clean up debris after this natural disaster by collecting and sorting **trash (red objects)** and **recyclables (green objects)** into designated bins or receptacles. The field will be set up with scattered objects and obstacles, simulating a post-disaster environment. **Obstacles** are represented by **yellow objects** and **special debris** such as animals and people are represented by **blue objects**.

**Preliminary round- Robots will be remote controlled by participants during gameplay.**

**Final Round- Robots will be automated with no control by participants during gameplay.**

### **Scoring System (100 Points Total)**

<b>Criteria</b>	<b>Objective</b>	<b>Total Points</b>	<b>Scoring Detail</b>
<b>Object Collection &amp; Sorting</b>	Reward robots for successfully collecting and sorting 10 objects -Object must be fully lifted off the ground to count. -If an object is dropped before being placed, it does not count. - Objects must be placed in the correct bin.	60	+3 points for each item picked up +3 points for each item correctly sorted
<b>Robot Design &amp; Innovation</b>	Assess creativity, functionality, and structural integrity of the robot. • Creativity • Stability and Durability	30	+10 Points for use of non-standard design elements and for unique attachments for picking up or sorting objects +10 points if robot remains functional after collisions. - Falls apart or loses key parts: -2 points. +10 points for effective use of sensors (e.g., object detection, auto-sorting).

<b>Coding and Automation</b> <b>(Criteria only applies to finals)</b>	Assess programming complexity and efficiency. <ul style="list-style-type: none"> <li>• Use of Sensors &amp; Programming</li> </ul>	10	2/10 points if basic motor control only 5/10 points if basic automation (move and pick up objects without human input) 10/10 points if advanced automation (object detection, auto-sorting, avoiding obstacles)
<b>Endgame Bonus</b>	Provide extra points for additional cleanup tasks. <ul style="list-style-type: none"> <li>• Clearing a blocked path</li> <li>• Handling a special object</li> </ul>	10	+5 points for moving an obstacle blocking access to an area. +5 points for correctly picking up and placing a designated "special debris" piece.

**NOTE: To ensure fairness, we remove extreme scores that are significantly different from the rest. If a judge's score is 15 points higher or lower than the average of the other judges' scores, it will be considered an outlier and excluded from the final calculation. This is done for both the preliminary and final judging.**

**Example:**

If most judges give a score between 70 and 80, but one judge gives a 95 or a 55, that score will be removed before calculating the final average. This helps prevent any unusually high or low score from unfairly impacting the results.

## Winning Criteria

- **Highest total score wins.**
- In case of a tie, priority is given to:
  1. **Fastest completion time in task completion.**