

WORLDSKILLS SINGAPORE 2027
TECHNICAL DESCRIPTION
AUTONOMOUS MOBILE ROBOTICS



Skill Competition

1. This competition involves designing, fabricating, assembling, programming, testing, troubleshooting, and operating an autonomous mobile robot. Work organization and management, as well as communication and interpersonal skills, are also to be observed.
2. Conducted as 2-person team event, competitors are given 18 to 21 hours over 3 days to complete the Test Projects for this competition.

Scope of Work

1. Competitors must be able to demonstrate competencies in the following areas:
 - Assemble/disassemble
 - Troubleshoot
 - Navigate on the ground
 - Manipulate
 - Design/Fabricate and integrate add-on component(s) [i.e, Gripper or End-Effector]
 - Develop an application program using vision and other sensors

Assessment

1. Each competition challenge task description package will include details defining the particular rules of the competition arena, game and scoring method that will be applied in that task.
2. The assessment criteria and relative weighting of marks are as follows:

Criterion		Marks
1	Work Organization and Management	10
2	Communication and interpersonal skills	10
3	Design	10
4	Prototyping	10
5	Navigation and Localization	8
6	Vision	8
7	Robot Environment Interaction	8
8	Testing and Fault Finding	8
9	Performance Review and Commissioning	28
Total		100

3. Final overall standing will be based on the total points scored by a team over the competition days.

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4. "Time taken to complete the task" may be one of the components used to evaluate performance.

Major Equipment, Tools and Materials

1. The following equipment and tools will be used in the competition:
 - Each team is required to bring 1 set of the WorldSkills Mobile Robotics Shanghai collection 2026 or latest kit and all the necessary parts [i.e., add-on components for the gripper or end-effector] for the competition.
 - Only 1 kit is allowed. Additional parts are allowed for the end-effector or gripper. No additional active components are allowed.
 - Teams have to use their own laptops/PCs with any operating system and software.
 - Only one laptop or PC can be used at a time. An additional spare PC or laptop can be brought as a back-up.
 - Teams can bring their own equipment to set up their own local area network. Organizers are not responsible for Wi-Fi communication problems.
 - Wi-Fi is only allowed between robot and laptop/PC.
 - No access to the internet is allowed.
 - AI models can be used but the AI model cannot have more than 4.5 billion parameters. Only offline AI models are allowed, i.e., no access to external API calls.
 - During the competition runs, laptop/PC can communicate with the robot. (The laptop/PC can do additional processing and communicate with the robot.)
 - Up to three microSD cards may be brought, but only one microSD card may be used at any one time during the competition run. The other 2 are spares.
 - No other computing device is allowed (only 1 PC/laptop).
 - No external storage nor computing devices are allowed except microSD cards.
 - All equipment, microSD cards, PC/Laptop, and tools must be brought to venue during Day 0 (familiarization day) and kept in WSS venue for all the competition days (Day 0 to Day 3).
2. Participants are permitted to install any additional packages or libraries for the standard software they deem useful during the familiarization day (Day 0).