MARC
Master AI Robot Cup

Rising Pioneers Innovation Challenge – General Rules

2025.09.08 V_NTSEC

1. Purpose of the Competition

Rising Pioneers is part of the MARC Innovation Challenge.
The competition encourages students to identify issues related to the annual theme and propose AI and robotics-based solutions.
Core objectives:

- Cultivate the 5C skills for the AI era: Critical Thinking, Creativity, Collaboration, Communication, and Computational Thinking.
- Inspire children to discover interests, explore talents, and develop areas of expertise.
- Guide students step by step toward real-world skills, progressing from creativity → technology → validation → application.
- Through the competition, connect learning with real-world needs, bridging to future industry skills.

2. Challenge

MARC 2025: Future Vision Robotics
Imagine the world 10 years from now – how will robots help humans?
Teams must design a creative solution and demonstrate their vision of the future through a project.

3. Age Groups

- Elementary School (Creative Explorers): Ages 7 – 12 (born 2013 – 2018), maximum 5 teams.
- Junior & Senior High School (Tech Builders): Ages 13 – 19 (born 2006 – 2012), maximum 10 teams (including up to 5 international teams).
- Mixed-age rule: If team members span both groups, the team will be placed in the Junior & Senior High School group based on the oldest member.
- Team composition: Each team consists of 2 – 4 students, with 1 – 2 coaches. Cross-school teams are allowed.

4. Competition Rules

- Teams must compete fairly and show respect to all teams, coaches, judges, and organizers.

- Student work principle: Robot assembly, programming, and booth design must be completed by the team. Coaches may provide guidance on planning and technical advice but must not perform the work.
- Judges will evaluate whether the booth and project presentation meet the standards expected for the team’s age group.
- Violation consequences (depending on severity, one or more may apply): deduction of up to 50% of points, disqualification from advancing, or immediate disqualification.
- Rule hierarchy:
    1. These general rules serve as the foundation.
    2. Official Q&A announcements (website / written notices) take precedence over the rules.
    3. On competition day, judges have the final authority.

5. Evaluation Criteria

Elementary School (Creative Explorers) – Total 100 points

1. Creativity & Imagination – 40 points
2. Appearance & Presentation – 25 points
3. Idea Expression & Storytelling – 20 points
4. Prototype or Hands-on Outcome – 15 points

Junior & Senior High School (Tech Builders) – Total 100 points

1. Problem Observation & Innovation – 30 points
2. Functionality & Mechanism Logic – 30 points
3. Process Design & Problem Solving – 20 points
4. Presentation & Demonstration – 20 points

6. Project Requirements

1) Basic Components

- Core control: At least one MATRIX Robotics R4 controller (multiple controllers allowed).
- Mechanical design: Use modular components (e.g., MATRIX parts) or self-developed fabrication (3D printing, laser cutting, craftsmanship, etc.); off-the-shelf complete robots are not allowed as the main structure or control core.
- Sensors/Actuators: e.g., motors, servos, LEDs, camera modules.
- Compatibility: Additional computing/sensing modules may be integrated.
- Projects may consist of a single robot or multiple robots. Communication or cooperation between robots (digital or mechanical) will be considered a bonus.

- Real-world context: Projects should simulate real applications where possible. If the solution could be manufactured, the model should demonstrate realistic functions and scale.

2) AI Demonstration Requirements

Group	Minimum AI Requirement
Elementary School	Demonstrate basic sensor input and clearly explain the AI decision-making principle (e.g., object recognition, color recognition, voice command). For safety, short remote control may be allowed during demonstrations, but AI results must still be shown.
Junior & Senior High School	Integrate multiple sensor inputs to perform AI-based decision-making or control (e.g., object recognition, color recognition, voice command, image recognition combined with motion control). Teams are encouraged to present basic data logging or test processes.

3) Booth Requirements & Safety

- Each team has a booth of 2m × 2m (max height 2m).
- Display content and format are flexible (posters, models, interactive demos, etc.), but must clearly explain the solution.
- Any behavior or setup that poses a safety risk (e.g., open flames, unprotected high-speed parts, exposed high-voltage electricity) is prohibited. Violations will result in disqualification.
- If the project is an extension of a previous one, the team must clearly explain improvements or new elements.

7. Deliverables

1. Project Report (PDF, ≤20 pages): team introduction, problem definition, technical design, data validation, social application, and innovation value.
2. Project Video (≤90 seconds): show the team, project operation, and application scenario.
3. On-site Presentation: booth and oral presentation.
4. Language: Chinese or English.

8. Awards

- Each group: Gold, Silver, Bronze.
- Special awards: Best Team Spirit, Technical Innovation, Future Entrepreneur.
- All participants will receive a certificate of participation.

9. Competition Process
    1. Preliminary round: Online registration and document submission (per official announcement).
    2. Final round: On-site booth presentation and Q&A with judges.
    3. Awards Ceremony: Announcement of winners and special awards.

10. Project Report Guidelines (recommended ≤20 pages)
    1. Cover Page (title / team / group / year)
    2. Abstract (highlights and creative value)
    3. Team Introduction (roles, interests, strengths)
    4. Problem Definition (observations, needs analysis)
    5. Concept Summary (solution and value)
    6. Technical Design (mechanical diagrams, control flow, programming logic)
    7. AI Application (aligned with group requirements)
    8. Data Validation (records, analysis, improvements – aligned with group level)
    9. Application Value (impact on education, life, society, industry)
    10. Conclusion & Outlook (future development)
    11. References (literature, resources)

11. Judging Process
    - Booth judging: ~5 minutes per team (3 minutes presentation + 2 minutes Q&A).
    - Scoring basis: According to the evaluation criteria (100 points total).
    - Fairness: The judging panel holds final authority. Violations may affect scores or result in disqualification.
    - Note: For accuracy, judges may ask follow-up questions or revisit teams multiple times. Teams should be prepared.