RoboCupJunior OnStage

2021

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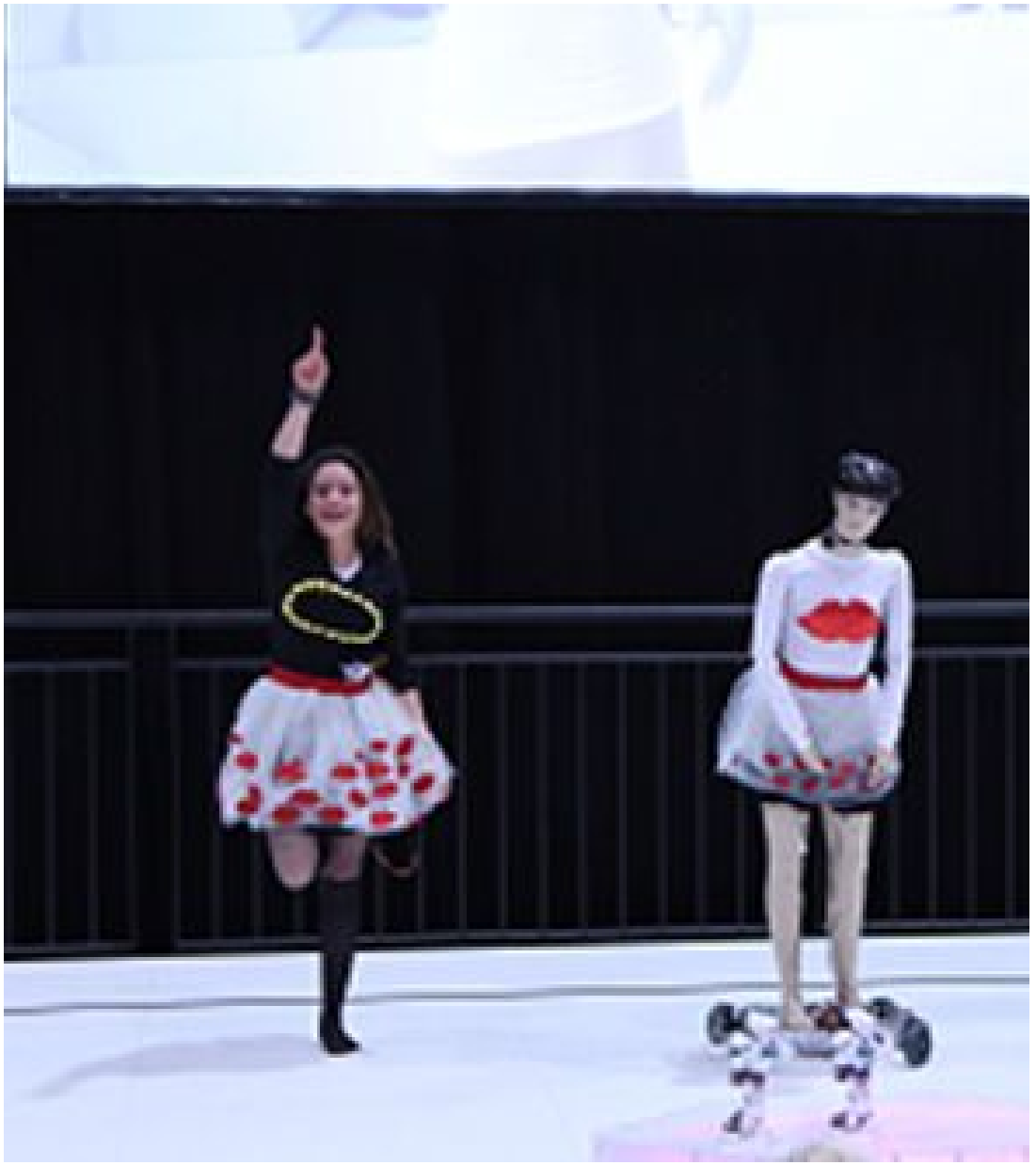
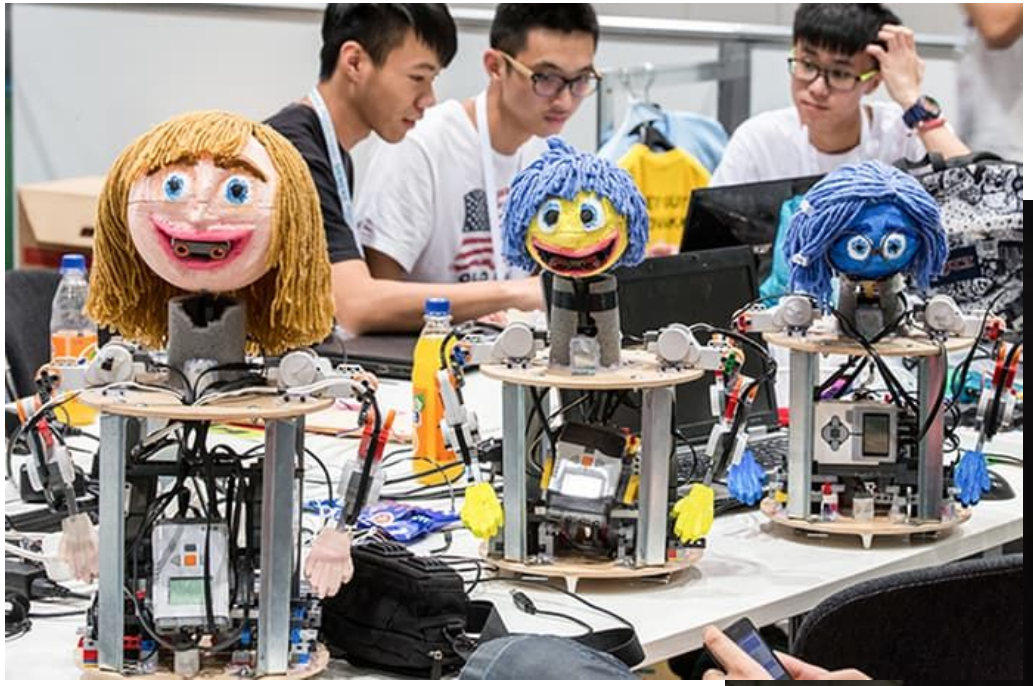
What is OnStage?

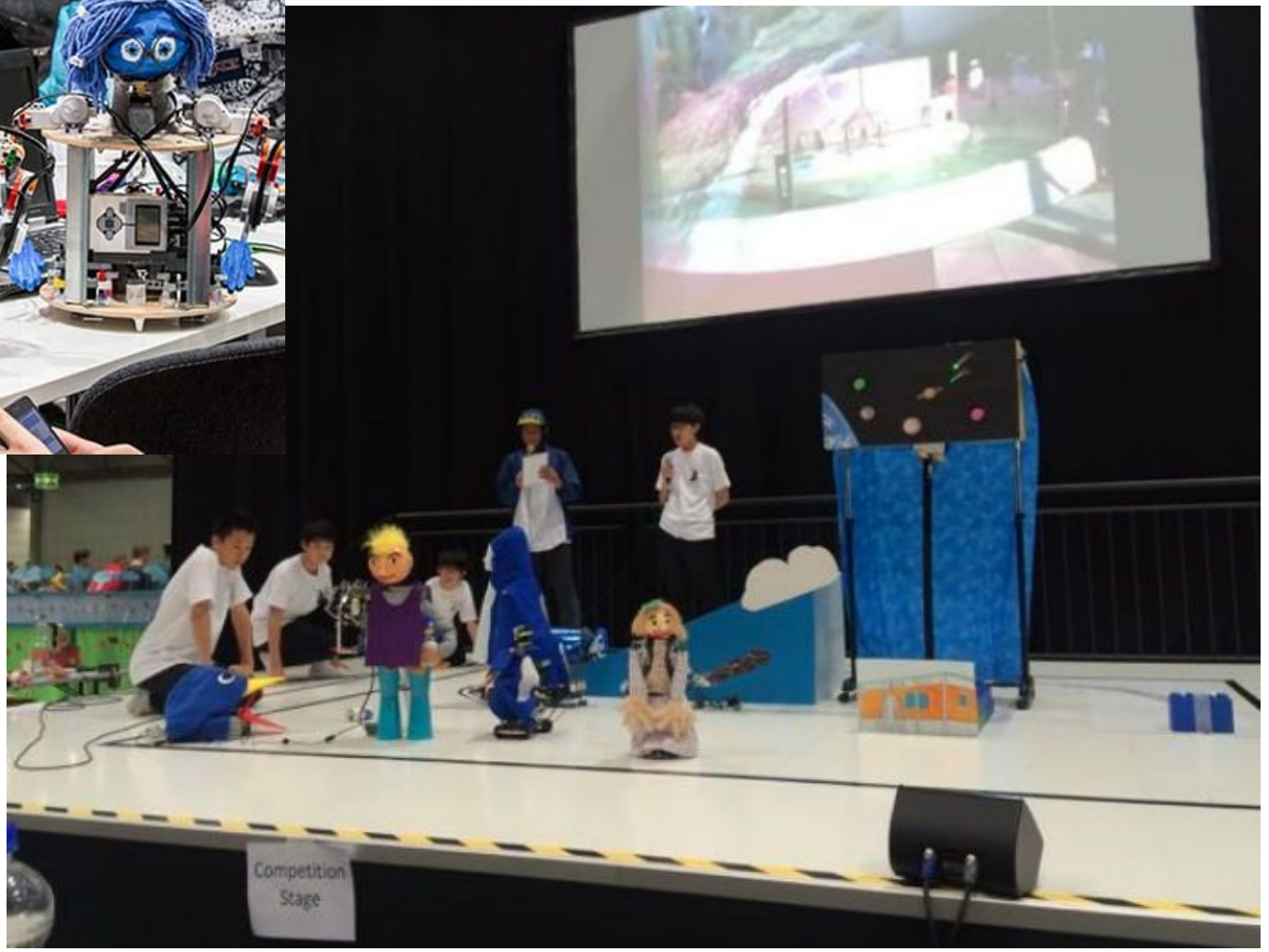
- Creative robotic performance
- Open-ended, NO specific missions
- Examples:
  - Dance, Storytelling, Theatre, Art
- 2 to 5 members per team
- Age 14 – 19 (as of 1 Jul)

Pictures of Past Events



Pictures of Past Events





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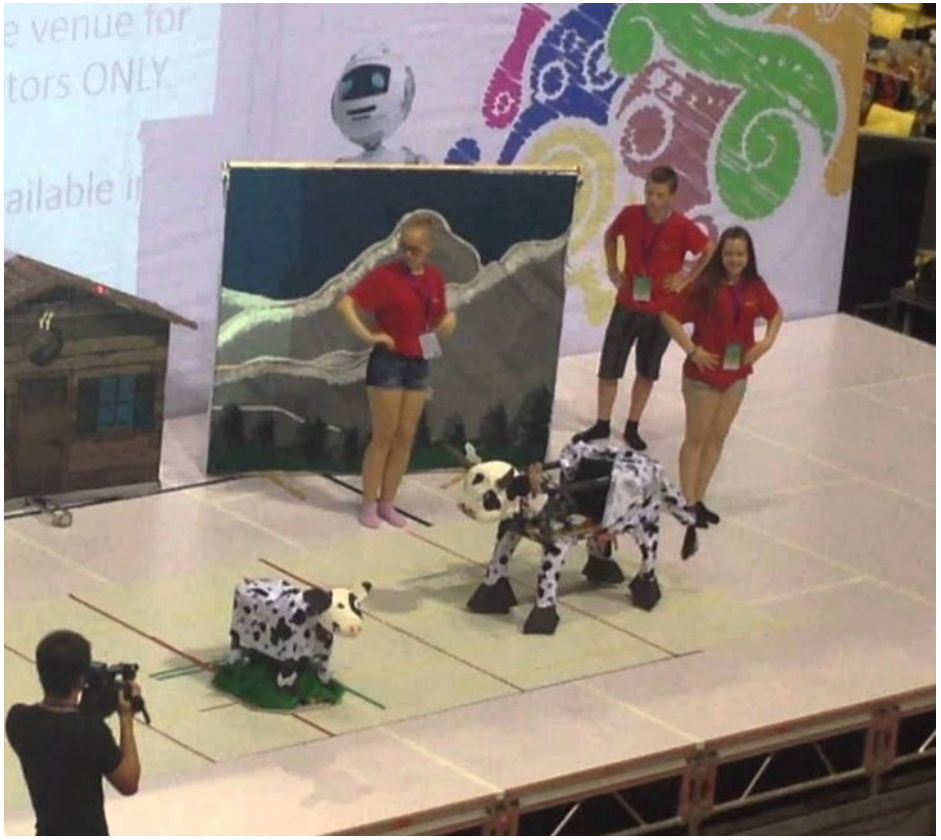

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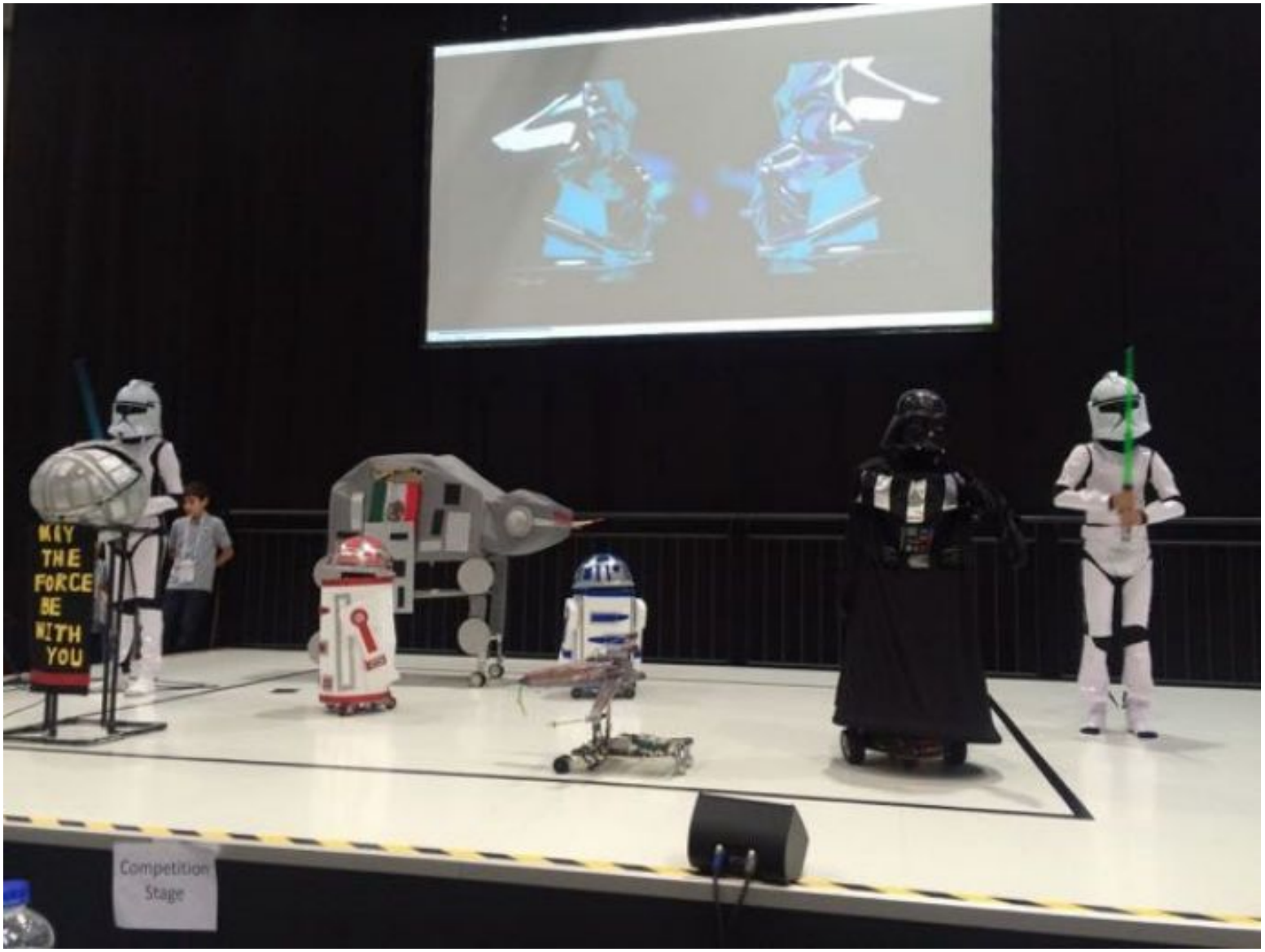


Official Website

- https://junior.robocup.org/onstage-preliminary

- READ the rules and the scoresheet
- SEARCH for past videos (...some may not be relevant anymore due to rules changes)

Judging Areas

- OnStage Performance
  - 1 to 2 mins
  - Judged on creativity, innovation, entertainment
- Technical Demonstration
  - 5 mins stage presentation
  - Showcase robot’s capabilities and technology
- Technical Interview
  - 15 mins
  - Judges will ask questions
- Technical Description Paper (International events)
  - 2 to 4 pages (template available)
  - Explain hardware, software, communications, algorithm

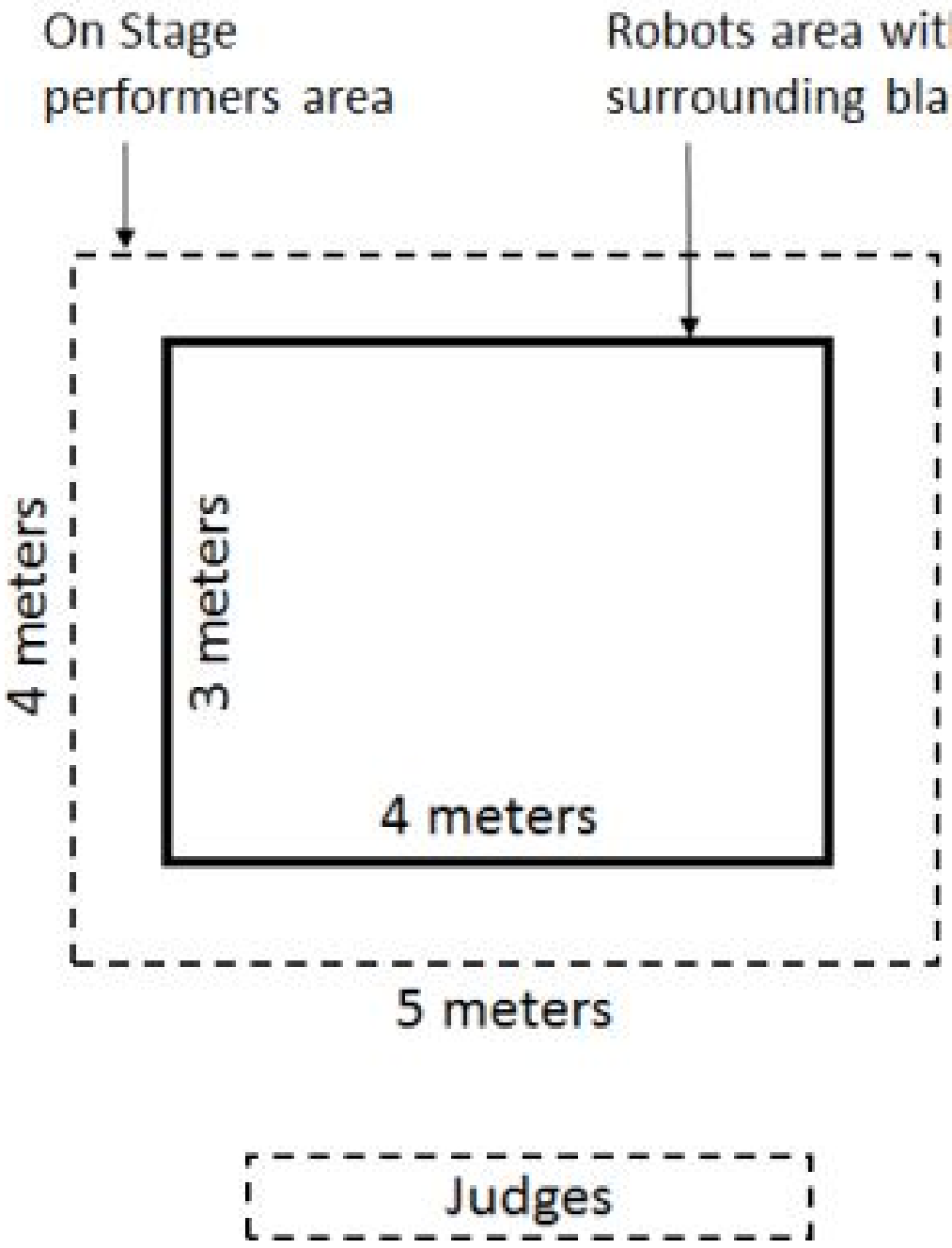
Rules (Robot)

- Pretty much anything can be used...
  - eg. laptop, Raspberry Pi, Lego EV3, Arduino
- ...but NO remote controls
- Any size (...but make sure it is transportable)
- Any number of robots
- Robots may communicate with each other
- NO flying robots (...for safety)

Rules (Performance)

- 1 to 2 mins performance
- May have music and visuals (eg. video, slides)
- Up to 2 humans on stage
- Robot may interact with...
  - Other robots on stage
  - Human performers on stage (via sensors only)
  - Visual presentations on screen
- Static props are allowed, but discouraged

Plan View of Stage Arrangement



Audio Visual Equipment:

- VGA Cable
- HDMI Cable
- 2 x microphone

Rules (Technical Demonstration)

- 5 mins presentation
- Describe...
  - Robot’s capability
  - Use of sensors
  - Interaction with humans and/or other robots
- Show robot’s mechanism
  - If mechanisms are covered up, bring photos or videos

Rules (Interview)

- 15 mins
- Judges will ask questions
- Bring robot and programs, you may need it to explain to judges
- Every team member should have a technical role and be able to explain what they did

Rules (Technical Paper)

- Needed for International Events
- Submit 3 weeks prior to the competition
- Should read through template, as it will help you prepare for the interview

Scoring

- 40 % : OnStage Performance
- 30 % : Technical Demonstration
- 30 % : Technical Interview

Scoring (Performance)

Quality of Performance (Costumes, Innovation, Theme, Originality)	12
Robot's Movement (Varied / fluid / risky movements, choreograph to music, uses entire stage)	12
Effective Use of Technology (Sensors add value to performance, unusual technology, technology used in unconventional ways, use of advanced technology)	10
Communications and Interactions (Human-Robot interactions, Robot-Robot interactions, Robot-Display interactions, Avoid hitting unexpected objects)	6
Deductions Unplanned human intervention Restarts Every 10s over allocated time Exit outer boundary	 -3 -5 -3 -3

Scoring (Technical Demonstration)

Presentation of fully working robotic system (Higher score for complex systems) Simple kit based (0 – 4) Working with range of sensors / actuators (5 – 7) Built from scratch (8 – 10)	10
Robot's Capabilities Simple sensor / actuator feedback loop (0 – 2) Integrate hardware / software in interesting ways (3 – 5) Innovative, creative, unusual robotics capabilities (6 – 8)	8
Clarity and quality of presentation Difficult to follow presentation (0 – 1) Effective presentation, most capabilities explained (2 – 3) All capabilities professionally presented (4 – 5)	5
Concept and technical innovation (Unusual, creative, ambitious concepts)	7

Scoring (Interview)

Programming (Efficient, advanced, innovative, developed libraries, machine learning, able to explain)	7
Mechanical Hardware (Reliable, complex, innovative, high precision, functional arms / hands / faces, able to manipulate objects, automatic balancing, able to explain)	9
Electronic Hardware (Custom built, innovative, GPS / accelerometer / gyro, able to explain)	7
Robot Communications and Interactions (Useful communications, vision recognition, voice recognition, able to talk, communication architecture, sensors used, able to explain)	7
Deductions Judges believe work not done by team Robot was reused Members unable to discuss their technical involvement	-15

What you should do...

- Discuss and plan your performance
- Be prepared to do your own research
- **Be ambitious** in your design, aim beyond what you can currently do
- **Manage your time**...
  - your first design will fail
  - your second design will probably fail
  - the third one might work
  - **fail early, learn from it, and try again**

How I can help...

- Guide you on how to build your robots using...
  - EV3, Raspberry Pi, Arduino
  - Powerful motors
  - Various sensors, not just the EV3 sensors
  - Wood, metal, plastic, drills, saws, 3D printing, etc
- Guide you on how to program...
  - Text to speech
  - Facial detection
  - C, C++, Python, JS, whatever...

What I won’t help with...

- Coming up with innovative ideas...
  - That’s on you
- Designing your robot / theme...
  - Your job
- Handhold you through the process...
  - Only have enough time to guide you through the difficult parts; you’ll have to figure out the rest on your own

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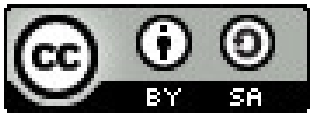

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