INTERNATIONAL ROBOT OLYMPIAD

AI GUARDIANS

INNOVATORS

Be the Safe AI Guardian for tomorrow

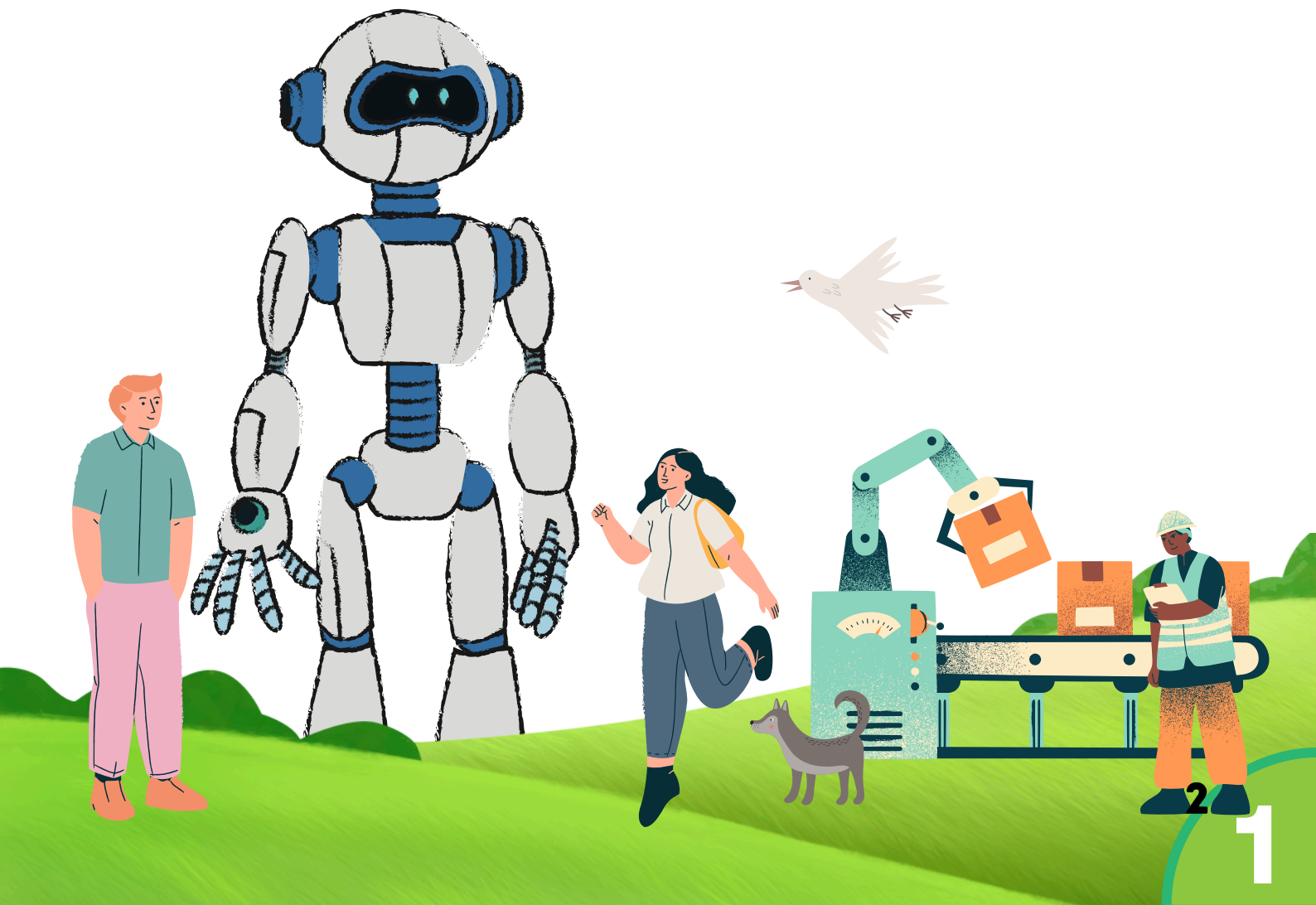
OFFICIAL RULEBOOK

WELCOME, INNOVATORS!

Young innovators of tomorrow, welcome to AI Guardians!

Your mission is to guide your robot companion through the vibrant world of AI, helping it grow into a responsible, intelligent guardian. As you build your robot, clean its data, and explore the city, every action you take helps shape a future where AI is fair, kind, and safe for all.

Pre-program your robot to complete exciting missions – assembling the AI Guardian, removing bad data, and protecting the city – all while earning points for creativity, precision, and teamwork.



INNOVATORS

CHALLENGE OVERVIEW

THEME OVERVIEW

Welcome to AI Guardians: Innovators, where your imagination meets technology to build a better, safer future with Artificial Intelligence!

In this exciting challenge, your mission is to guide your robot through the vibrant world of AI – a place where machines are not just tools, but guardians of fairness, safety, and understanding. This year's theme invites you to explore how intelligent systems can become helpful companions to humans – but only if they are built with care, accuracy, and responsibility.

The journey begins by assembling your AI Guardian, giving it a mind, body, and feelings. Each part your robot places represents a building block of trustworthy AI – from the power of understanding emotions to the strength of physical movement. But there's more than just building! Along the way, you'll need to clean harmful or misleading data that can confuse your robot, just like real AI needs good data to learn and grow. You'll also follow the city's path to make sure everything is safe, alerting your AI Guardian to its role as a protector.

Throughout your adventure, you'll face obstacles, like avoiding living beings and navigating tight turns, but every move teaches a valuable lesson: being smart isn't enough – being kind, clear, and fair matters even more.

COMPETITION COMPONENTS AND AWARDS' SPACES

🤖 1. Robot Game - Pages 6 to 17

- How well can your robot complete the missions?
- You'll earn points depending on how it performs on the mat!

👫 2. Team Motivation - Page 18

- Joining the AI Guardians challenge is more than just building robots; it's about personal growth.
- Judges will observe if you support each other, share tasks, and maintain positivity, even during setbacks.
- This is also an opportunity for more students to participate as part of "Cheerleading" teams

💡 3. AI Invention Proposal - Page 19

- What's your big idea for using AI to help people in the real world?
- Your team can create a simple drawing or write a short explanation of a new AI invention – maybe a robot that helps kids learn, keeps the planet clean, or keeps people safe!

🎤 4. Team Presentation - Page 20

- Can you explain your robot and your Invention proposal impressively?
- You'll talk about your robot design, your code, and how your team made decisions. Clear drawings, fun ideas, and great teamwork make this part extra magical.

🤖 1. Robot Game

ROBOT DESIGN & STRATEGY

In this challenge, it's not just about what your robot does – it's also about how you build it, plan it, and make it better. You'll get to share your ideas and tell the story of your robot!

You should:

🤖 **Talk about your robot's design** – what makes it special and how it helps with the missions.

💡 **Explain your code** – how your robot knows when to move, turn, or stop.

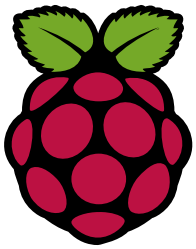
📋 **Share your plan** – How you approached each mission.

🔧 **Keep testing and improving** – it's okay to make mistakes, just learn from them and try again!

👫 **Show how everyone helped** – building, coding, planning, and testing together as a team.

ROBOT SPECIFICATIONS

Your team will work together to design and build a robot using one of the following Robotics kits.



Robot Constraints:

- Must be entirely autonomous and Semi autonomous.
- Your robot is allowed to use a **maximum of 4 motors, and 1 hub.**
- Your robot size should be within 30 cm × 30 cm × 30 cm.
- **No replacement** of attachments are allowed within the matches.

ROBOT GAME

- The Robot Game is in the form of a **match**
- Your team can have up to **2 matches**
- A match is **4 minutes** long, in which your robot should attempt as many missions as it can from the following missions:

Mission 1: Building the AI Guardian

Assemble your AI robot! Collect the five body tokens and place each on the correct label – Mind, Body, Motors, Feelings, and Expressions – while avoiding living creatures.

Mission 2: Patrol the City

Follow the black line around the city in a full loop, checking every area to keep it safe! stop near clean data point.

Surprise Mission: Cleaning the Data

Cross every red data point and make a 2-second Halt to show you've spotted and handled the bad data.

GENERAL
MISSIONS RULES

- Your robot must be launched from the **Start Zone** located on the mat. It should be fully prepared with the necessary coding and attachments for **all** the tasks your team plans to attempt.
- Teams must attempt the three missions in **the given order** . It's up to your team to plan and strategize the best way to perform each mission and maximize your score while following the required sequence.
- Each team will compete in two official matches. Use each match as a chance to improve your strategy and performance. **Only your highest score will count toward rankings and awards.**
- Team members and coaches must not touch or move their **robot or any game element** on the mat during a match. Violating this rule will result in a loss of points as outlined in the rubric.
  Hands-on interaction is permitted **only** within the designated home areas.
- You are not allowed to manually move your robot from one home area to the other, if you need to change the home area, program your robot to do so.
- Along with your robot's performance, teamwork, communication, and positive conduct matter. Judges and referees will observe how well your team works together, supports each other, and treats others with respect throughout the event.

GAME ZONES

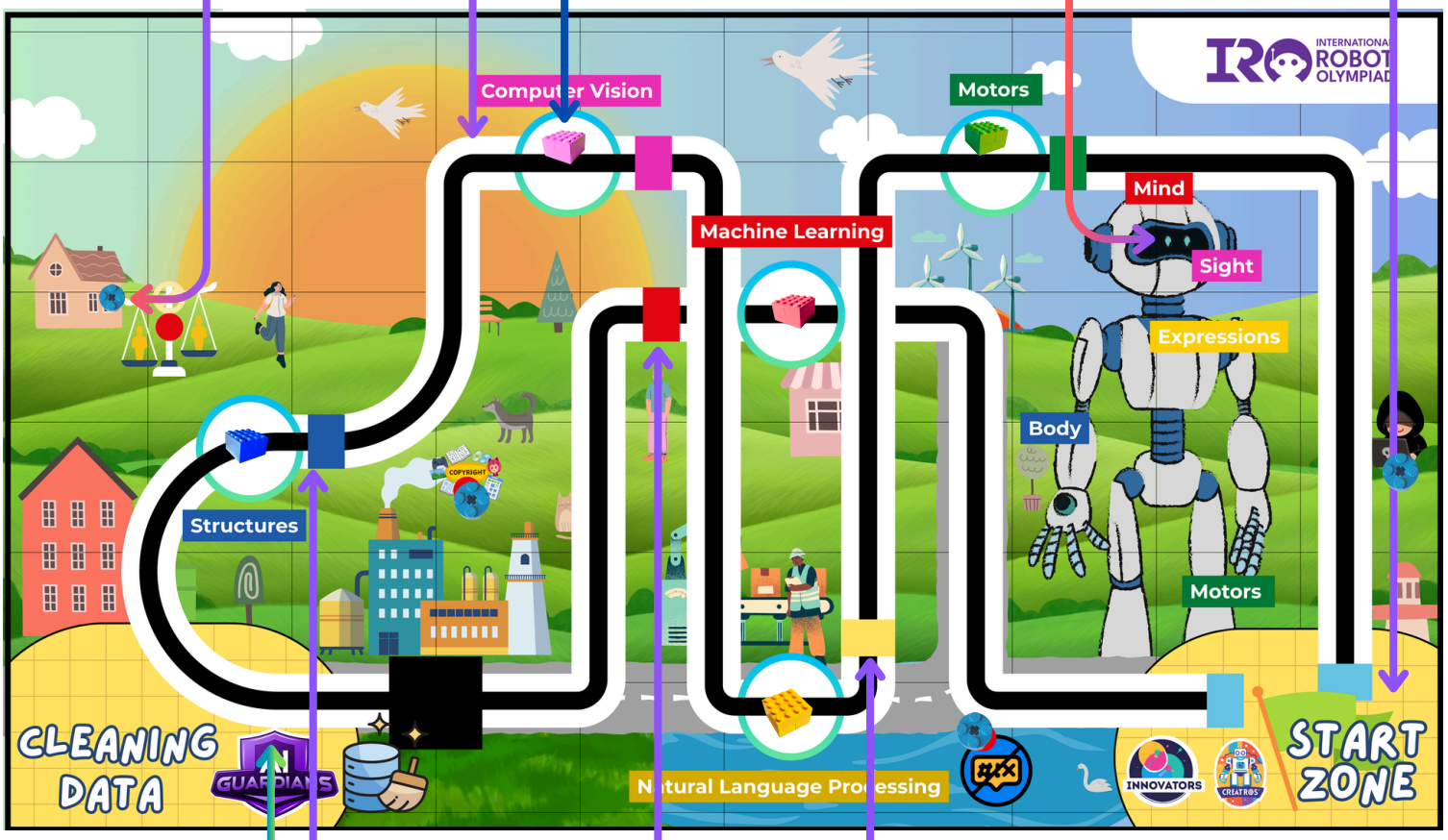
Home Area 1 - Start Zone

Line Following

Tokens

Bad Data token

AI Guardian Robot

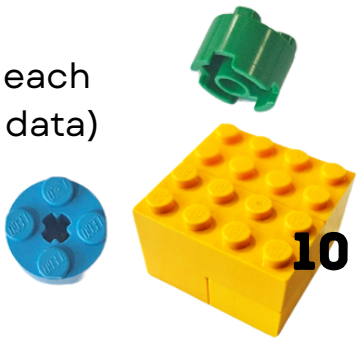


Home Area 2 - Data Cleaning

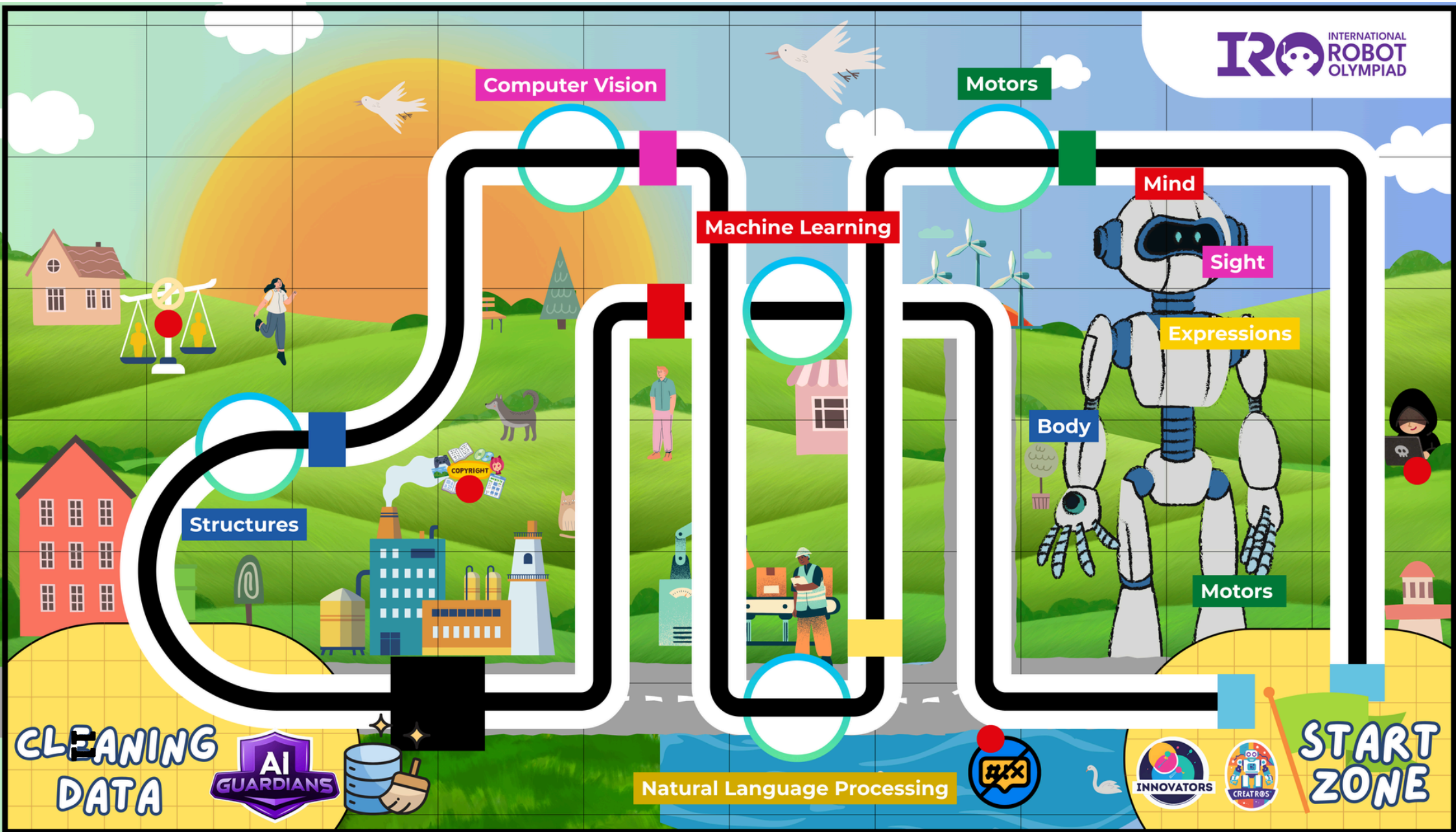
Color Bars

TOKENS

- At the start of the game 5 LEGO blocks will be centered in each safe AI circle, and 4 LEGO tokens in middle of red dot (bad data)
- Blocks consisting of 2 by 2 bricks
  - size ~ 3.5cm width by 3.5cm length by 6cm height
- Token size diameter ~1.6cm (Stack of two such tokens)



MAT DESIGN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Computer Vision
Motors
Machine Learning
Mind
Sight
Expressions
Body
Motors
Structures
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CLEANING DATA
AI GUARDIANS
Natural Language Processing
#@x
INNOVATORS
CREATORS
START ZONE

MISSIONS DETAILS

Let’s explore the missions

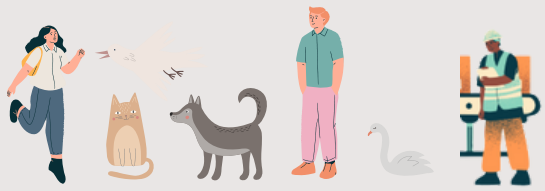
01 BUILDING THE AI GUARDIAN

Starting position:
Start Zone

Ending position:
Data Cleaning Zone

Mission Description:

- Your robot starts by building the AI Guardian. There are five building Tokens around the mat which your robot should move to their designated position in the AI Guardian’s body.
- Your mission is to place the correct tokens touching the correct label.
- You need to also avoid the obstacles on your way:



Do not hurt any living creatures

Do not get infected by bad data

- This shows your robot dedication to keep the environment safe while developing Artificial Intelligence.

Example:

- Structures token  **Structures** should be touching **Body** label.

Scoring:

- Token fully touching the correct colored label (10 points each)

Penalty

- Obstacles hit (-5 points each)
  - The team will lose 5 points for each obstacle the robot hits.

MAXIMUM SCORE FOR THIS CHALLENGE IS 50 POINTS.

MISSIONS DETAILS

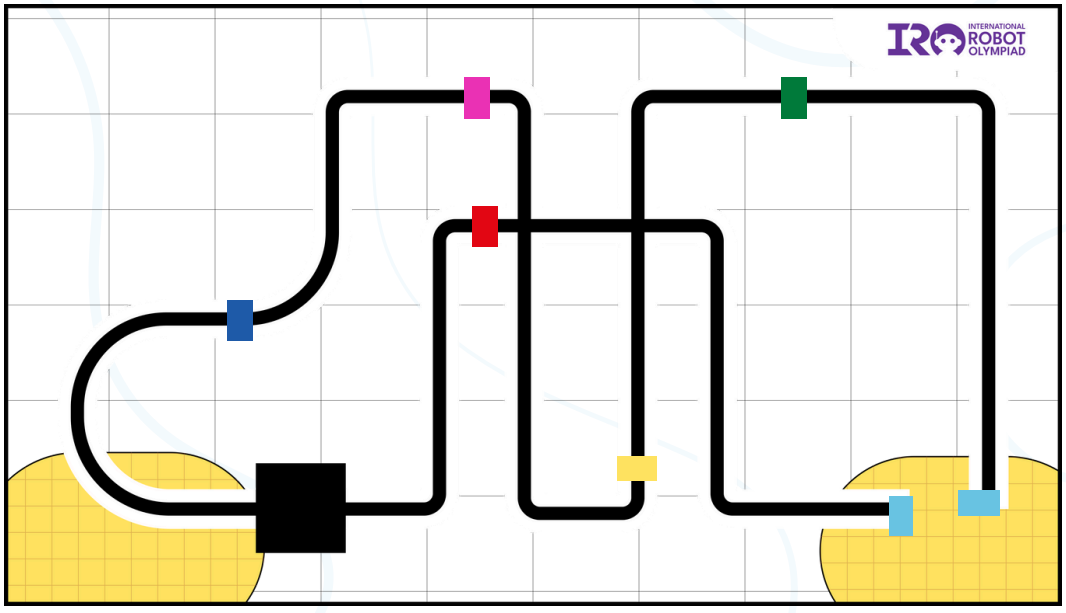
02 PATROL THE CITY

Starting position:
Start Zone

Ending position:
Data Cleaning Zone

Mission Description:

- Make a one full loop of following the line to go around the city and make sure every place is safe.
- It's up to your team to decide whether use sensors or distances while following the line, however, if you are using distances instead of sensors your robot must keep the black line in the middle it.



Scoring:

- Successfully following the line (10 points at each color bar)

MAXIMUM SCORE FOR THIS CHALLENGE IS 70 POINTS.

SURPRISE MISSION:

03 CLEANING THE DATA

Starting position:
Data Cleaning Zone

Ending position:
Starting Zone

Mission Description:

- Remove the token placed on each red data point and make a 2-second Halt to confirm that the bad data has been identified and handled.



- You need to also avoid the obstacles:

Do not hurt any living creatures

Scoring:

- Token not touching red dots (5 points each)
- Declaring (5 points each)

Penalty

- Obstacles hit (-5 points each)
  - The team will lose 5 points for each obstacle the robot hits.

MAXIMUM SCORE FOR THIS CHALLENGE IS 40 POINTS.

GLOBAL
POINTS OR PENALTIES

TIME BONUS

Time Bonus: Your team will earn bonus points based on how quickly you finish **all missions.** The faster you finish, the more points you earn!

Time Bonus Chart	
Timer when team declares "Finished"	**Total Bonus Points**
Completed between 3 mins and 4 mins	0
Completed between 2 mins and 3 mins	10
Completed in under 2 mins	20

Only the teams who will attempt **all missions** will be eligible for Time Bonus

MANUAL ADJUSTMENTS

Every time a team member or a coach touches the robot or a token outside the home areas points will be deducted from their total score

Penalties Chart	
Number of illegal manual adjustments	**Total deduction**
0	0
once	- 5
Twice	-10
more than twice	Disqualification

GLOBAL
POINTS OR PENALTIES

ROBOT TYPE BONUS

Teams that present an autonomous robot will be eligible for a bonus, which will be added to their total score.

1. Teams with autonomous bots will get 2 extra point for each task they complete.
2. Team will have a flexibility to skip one penalty.
3. Team will have a option of touching the bot two times with out any penalty

BOT TYPES

Teams are allowed to make any bot with in in the limitations either manual or autonomous.

1. Team with Autonomous will be applicable for robot type bonus.
2. They have advantages in rules which are mentioned in the rules.

GETTING STARTED

Start with:

- Placing the Mat on a flat surface.
- Building the blocks and tokens and setting up the game mat properly before starting.

Read the Challenge Overview carefully.

- to learn how to maximize your score

Review the Rules Section to understand:

- How a match is started and finished.
- What your robot is allowed and not allowed to do.
- How scoring works for each mission.

Then,

- Build a basic robot using one of the allowed kits.

You are free to customize your robot by adding sensors, grabbers, and attachments based on the missions you want to complete.

- **No specific building instructions are provided –** this is your chance to be creative and innovative with your robot design.

Note:

- The competition table has boarders from all sides.
  - Table size: 2400x1200 mm
  - Mat size: 2004x1143 mm

EXAMPLE SCENARIO FOR ROBOT GAME

Step one: Judges will inspect the robot to make sure it is following the allowed specs

Step two: After the team has passed inspection, they will be given a couple of minutes to set up.

Step three: The team should inform the Judge that they are ready and wait for their approval to start.

After launching:

- Team members may not touch any game model or the robot outside the start zone to avoid losing points and/or get disqualified.
- Between mission, the robot must return back to one of the home areas only then the team members can switch the programs and adjust the robot direction if needed.
- The time taken to set up and start new code between missions is included in the total match time (4 minutes). Referees will not pause the timer during this process.

After 4 Minutes:

- After 4 minutes, the match ends. Technicians must stop their robot and touch nothing else. This is when scoring begins.
- For scoring, all mission requirements must be visible at the end of the match or as otherwise mentioned in the mission details.

👫 2. Team Motivationl

TEAM MOTIVATION & VALUES

In the world of AI Guardians, innovation thrives not just through code and mechanics, but through the power of collaboration. Success isn't only about completing missions – it's about how you design, think, and grow as a team of creators.

Your team should:

🧠 **Collaborate** like visionary inventors, bringing together your diverse skills to navigate challenges and build something greater than the sum of its parts.

💡 **Think** boldly and **solve** creatively, whether you're designing your robot, programming solutions, or adapting to unexpected obstacles.

🤝 **Support** one another with respect and inclusion, making sure every team member's ideas are valued and voices are heard – within your team and across the competition.

🚀 **Enjoy the journey!** Celebrate each step forward, learn from every challenge, and make your mark as the next generation of changemakers.

3. AI Invention Proposal

TEAM AI INVENTION PROPOSAL

As the future creators and problem-solvers of the world, your team is invited to design a concept for a brand-new AI-powered invention. Think big! Your invention could improve how we learn, protect the environment, enhance safety, or solve any real-world challenge that matters to you.

You should:

1. **Research & Brainstorm**
2. **Identify a problem** you'd like to solve using AI. What kind of invention could make life better for people, communities, or the planet?
3. **Develop Your Idea**
4. **Choose your best concept.** Research similar technologies or solutions. What makes your idea unique or innovative? What technologies might it use?
5. **Prepare to Present**
6. Think about **how you will clearly explain your idea** to the judges during your team presentation. You can use:
   - Diagrams or drawings
   - A short video or digital slide deck
   - A physical or digital prototype (optional)

It is up to your team to decide how will you showcase your idea.

🎤 4. Team Presentation

TEAM PRESENTATION

Your team will have 5 minutes to present their work to the Judges.

In this presentation you should:

- Tell the judges about your proposed invention and why it is important!
- Explain your robot design, code, and strategy
- Share your team's process

It's up to your team to decide how you want to present your work. You may use posters, slides, prototypes, or any other creative method – these are optional, not mandatory.

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