4-H STEM Extravaganza 2021

RoboPet Challenge Rules

For this challenge, each team will design a RoboPet. Maybe a cat, a dog, a dragon, a dinosaur, an elephant, or an animal that hasn't been discovered yet!

The main objective is to design the RoboPet for movement, and create a habitat (e.g. mat) in which your RoboPet travels from its "home" site to find food while avoiding obstacles/dangers along the way. Each RoboPet habitat (mat) must include at least two dangers/obstacles, a sleeping/home location at one end, and an eating location at the other. Habitat obstacles may be placed anywhere the team chooses, and can be made from any materials (lego pieces or other). Each team will have 2 rounds of 3 minutes each for their RoboPet to successfully find food.

Teams are encouraged to be creative in the design of their habitat, as well as the design of the robot. They will be judged based on the number and complexity of functions built into the RoboPet program and its performance on the field. Outlined below are the points that are available for each challenge that is accomplished.

The RoboPet competition is composed of two parts:

1. Robot Performance on the field
2. Interview - Communication, Technical Skills and Teamwork

It is not expected that teams will achieve perfect scores in the Robot Performance (maximum of 200 points), but rather that the team members design a robot and program such that reflects their current level of learning. The challenge is designed to be open-ended and includes a lot of room for creativity.

The rules for the performance judging are as follows:

1. Team members at the performance table will have a brief time to position their mat and prepare their robot for tournament play as well as introduce team members.
2. One team member should raise his or her hand to alert the referee and the timekeeper that the team is ready. The team member's hand should remain raised until the round begins.
3. While the robot is in action, the team members will not touch the performance table.
4. Touching the robot is not allowed after the timer has started. If the robot is touched by a team member, the timer will be stopped and no points will be assigned.
5. Each team will be allowed only one restart opportunity during the competition. Make sure that team members understand this rule.
6. Each team will have two three-minute rounds of Robot Performance with 2 minutes in between to make adjustments. The best score of the two rounds will be used.

Food Find: (60 points max)

- RoboPet travels the length of the habitat (e.g. table): +10 points

- RoboPet identifies food source and picks up or moves food back to home base +30 points

- RoboPet completes the food find task within 3 min time limit: +20 points

Survival: (50 points max)

- RoboPet encounters 3D or painted habitat danger (e.g. obstacle) and changes direction when sensed: +10 points per obstacle (max. 30 pts)

- RoboPet encounters 3D or painted habitat danger (e.g. obstacle) and sensor activates robot arm/ grabber/kicker to remove obstacle from path: 20 points per obstacle (max. 40 pts)

- RoboPet uses more than one kind of sensor to navigate the habitat: +10 points

RoboPet Design: (50 points max)

- Original design, not based on building guide: +10 points

- Unique use of sensors: +10 points

- RoboPet uses moving appendage (e.g. wing, trunk, tail, ear, head): +10 points per appendage (max. 20 points)

- RoboPet has change in posture that indicates awake/sleep modes: +10 points

RoboPet Behavior: (40 points max)

- RoboPet makes sounds when it is NOT moving: +10 points

- RoboPet makes sounds while moving: +20 points

- RoboPet has unique movement: +10 points

Total possible points: 200 points per round. The round with the highest point total will be counted as the team's official robot performance score.

Team Interview:

During the interview, the team will meet with a panel of judges who will ask about the team's robot, the program and the team's design and build process. The team will also be asked to complete a short task in order to assess how the team works together to accomplish a goal. These interviews will be conversational and low key with the goal to provide youth with the opportunity to talk about their work and share the excitement and challenges of the project. Parents/coaches/teachers will not be allowed in the interview area. Teams should bring a printed copy of their program with them to the interview. A maximum of 220 points is available for the team interview - 100 points for the technical interview and 120 points for the teamwork judging.

Competition Tables:

At the event, teams will demonstrate their RoboPet on a performance table. These tables match the dimensions of those used for First Lego League competitions (96" x 48" x 3/8" or thicker with a rim to contain the robot). The mat used for your RoboPet habitat should fit within the dimensions of this table. The "home" base should be within 2 inches of one end of the table, and the food source should be within 2 inches of the opposite end.

Supplies:

Each team is responsible for bringing their own robot and RoboPet habitat mat. Teams may choose any material for their mat, as long as it fits within the performance table. As one option, teams are encouraged to look for groups in their community who have participated in past First Lego League competitions. The FLL mats could be turned over to create a blank surface and then customized with different colored electrical tape or other materials to create your RoboPet habitat. Because FLL creates new mats for each year's competition, FLL clubs may be willing to donate or loan their old mats. Any materials may be used for habitat obstacles and decoration. Teams are also allowed to add materials to their RoboPet design (e.g. feathers, horns, etc.). The RoboPet robot may be built from any commercial robot kit (ie LEGO NXT, RCX, VEX, BoeBot, etc....) or from home built components.

Eligibility

1. This event is open to all youth, ages 8 - 18.

2. Counties and schools may send as many teams to this event as they would like, though overall

registration for the RoboPet Challenge is limited to the first 24 teams to register. 3. This is a team

competition and has three age divisions:

  Junior - ages 8 to 10

  Intermediate - 11 to 13

  Senior - 14 to 18

These age ranges are suggested guidelines and we understand that in certain circumstances adjustments will need to be made at the discretion of the parents/teachers/coaches. We ask that parents/ teachers/coaches use their best judgement when allowing youth to participate on a team with youth of different ages to make sure that ALL members of the team are participating fully to their ability. Our goal in this event is to provide a fun and challenging experience for all. When registering a team, if any of the members are outside the suggested age guidelines, please provide a brief explanation.