2011 Illinois 4-H State Robotics Competition

RoboPet Challenge

For this challenge, your team will design your own 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 your 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 3 minutes for their robopet to successfully find food.

You are encouraged to be creative in the design of your habitat, as well as the design of your robot. You will be judged based on the number and complexity of functions built into your robopet program. Outlined below are the points that are available for each challenge that you accomplish.

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) (UPDATED 2/11)
- 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

Competition Tables: At the challenge event, you will demonstrate your 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). They are made of plywood with flat black paint. 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 can 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.).