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Project: Control a Dog-Like Creature with Linkbot

Learn how to control a Linkbot system created using Cube Connectors

Introduction:

Linkbot is a reconfigurable modular educational robot. Each Linkbot is a building block. Multiple Linkbots and accessories can be easily snapped together, without special tools, to create various Linkbot systems for different tasks and projects. In this project, 2 Linkbot-I, 1 Linkbot-L, and other accessories are used to cerate a dog-like creature. The project demonstrates that Linkbot can be used as a building block in a complex Linkbot system.

Information:

- Grades: 6 – 12
- Duration: 1-4 Hours
- Level: Intermediate

Parts Used in the Project:

- 2 Linkbot-I
- 1 Linkbot-L (used for mouth. You can replace it by Linkbot-I)
- 1 Linkbot Dongle (or another Linkbot as a Dongle)
- 2 4” wheels
- 11 Cube Connectors
- 1 Gripper Pair
- 4 Bridge Connectors
- 1 Ball Caster
- 23 Snap Connectors

Setup:

Joint 3 of robot1 and joint 1 of robot2 are connected to the Cube Connector as shown in Figure 1. A pair of grippers are used as a mouth for the dog.

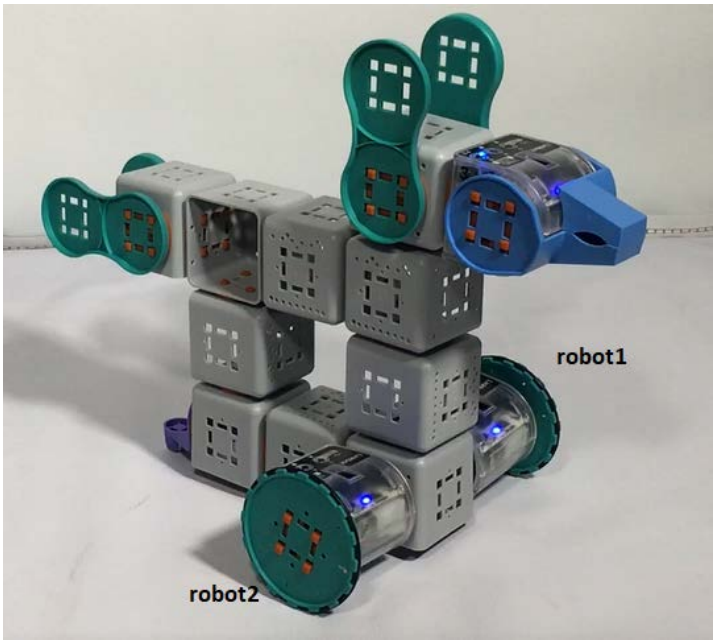

Figure 1: The configuration of the dog.

Programming the dog in Ch:

A Ch program dog.ch can be used to control this dog creature. The member function robot.moveJoint() is used to control the movement of a joint. The non-blocking member function robot.moveJointNB() is used to control two join motions at once, with the member function robot.moveWait() for synchronization of motions for two joints.

```
/* File: dog.ch
   Drive a dog robot with two linkbots
   and use a gripper as a mouth.
   Joint 3 of robot1 and joint 1 of robot2
   are connected to the Cube Connector */
#include <linkbot.h>
CLinkbotI robot1, robot2;
CLinkbotL mouth;  /* you can replace Linkbot-L by
Linkbit I */
```



```
// move dog forward
robot1.moveJointNB(JOINT1, 180);
robot2.moveJoint(JOINT3, -180);
robot1.moveWait();

// turn dog to right
robot1.moveJointNB(JOINT1, 120);
robot2.moveJoint(JOINT3, 120);
robot1.moveWait();

// move dog forward
robot1.moveJointNB(JOINT1, 180);
robot2.moveJointNB(JOINT3, -180);
robot1.moveWait();

// turn head side to side
mouth.moveJoint(JOINT2, 45);
mouth.moveJoint(JOINT2, -90);
mouth.moveJoint(JOINT2, 45);

// move dog forward
robot1.moveJointNB(JOINT1, 180);
robot2.moveJoint(JOINT3, -180);
robot1.moveWait();

// open and close mouth
mouth.moveJoint(JOINT1, -45);
mouth.moveJoint(JOINT1, 45);
```