Makerspace Project:

Make an inchworm using littleBits

Step-by-Step Instructions
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Materials Needed:

(1) Jumbo paperclip
Cardboard – 3” x 12”
(1) AAA battery (for weight only)
Bamboo skewers or dowel rods
Double sided tape
(1) Small zip tie
(1) Large zip tie
Packaging tape
(1) 9v battery
littleBits® Needed:

(1) P1 Power Bit
(1) i16 Pulse Bit
(1) o11 Servo Bit w/ servo
(1) Power cable for 9v battery
Tools Needed:

- Needle nose pliers
- Xacto or utility knife
- Wire cutter
- Scissors
STEP 1: Make the inchworm body

Cut a piece of cardboard to 12”w x 3”h
STEP 2: Make the inchworm feet

Cut “feet” equally on both sides of body – 2” wide
STEP 3: Tape inchworm feet to body

Using shipping tape, secure feet to body. Tape both sides, front and back.
STEP 4: Reinforce body

Cut bamboo skewers or dowel rod & tape to back of body for structural strength
STEP 5: Cut opening for servo

Using a razor, cut an opening in the body measuring 1”h x 2.5”w
STEP 6: Mount servo bit on body

Place the o11 servo bit in the center of the opening and secure to body using zip-ties.
STEP 7: Create traction triangles on feet

Using razor, cut triangle shapes in both feet. Pop these triangles out using rod. Make sure triangles are going in the same direction.
STEP 8: Apply double sided tape

Apply double sided tape to the middle of both feet.
STEP 9: Add weight and build bit assembly

1 - The feet need weight on them in order to get traction.
2 - Place a battery on the left foot.
3 - Mount the littleBits 9v battery on the right foot.
4 - Connect the P1 power bit to the cable and then to the 9v battery.
5 - Attach the i16 pulse bit to the P1.
6 - Attach the o11 servo bit to the pulse bit.
STEP 10: Secure bit assembly to body

Using a zip-tie, loosely secure the bit assembly around the cable connection. NOTE- Don’t tighten zip-tie until later.
STEP 11: Create servo linkage

Bend a jumbo paperclip into the shape outlined above. The far right side goes straight up while the other bends are 90’ angles.
STEP 12: Mount servo linkage

1 - Insert the right side of paperclip that is going straight up into hole on servo.
2 – Pop the other end through the cardboard just below the zip-tie.
STEP 13: Finish servo linkage connection

1. Bend the paperclip that came through cardboard for a secure connection.
2. You can now fully tighten the zip-tie around the power cable.
Your littleBits inchworm is now complete and ready to race. For best traction, it is recommended to use on a carpeted surface. NOTE – adjust speed of inchworm by turning dial on pulse bit.