

Why the Create is a good base for a robot

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Introduction

- The Create is a great base, both mechanically and programmatically, for five main reasons:
 - Pre-assembled
 - Points of attachment
 - Built-in sensors
 - Shape and motor placement
 - Ease with programming

Pre-Assembled

- The Create being pre-built saves time when constructing a robot.
- It saves time because we do not need to spent time building a frame and wheelbase for a CBC-only



Pre-Assembled(continued)

- For example, this year we designed a conveyor belt for the CBC robot, but we had many problems with designing a wheelbase and frame for the design.
- If we had used the Create, it would have been easier to attach.



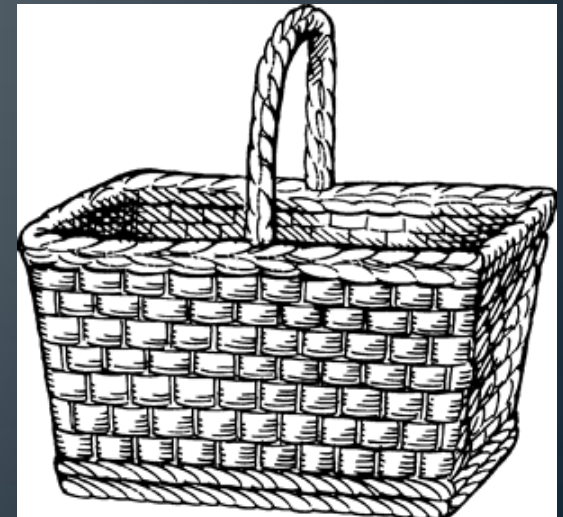
Attachment Points

- The attachment points on the Create are very useful features.
- They make the Create more modular, and, therefore, easier to work with.



Attachment Points(continued)

- For example, we would screw a claw arm on in one place and a basket in another with relative ease.
- This would allow us to spend more time on making the claws, baskets, or other attachments rather than fixing the attachments in place and checking constantly that the attachments points are secure.



Attachment Points(continued)

- On average, it takes us an hour to develop the best way to attach every component, then another half-hour to make sure that the connection was strong and durable.
- With the Create, we have been able to cut down on construction time that can be used for programming or more improvement of the robots.



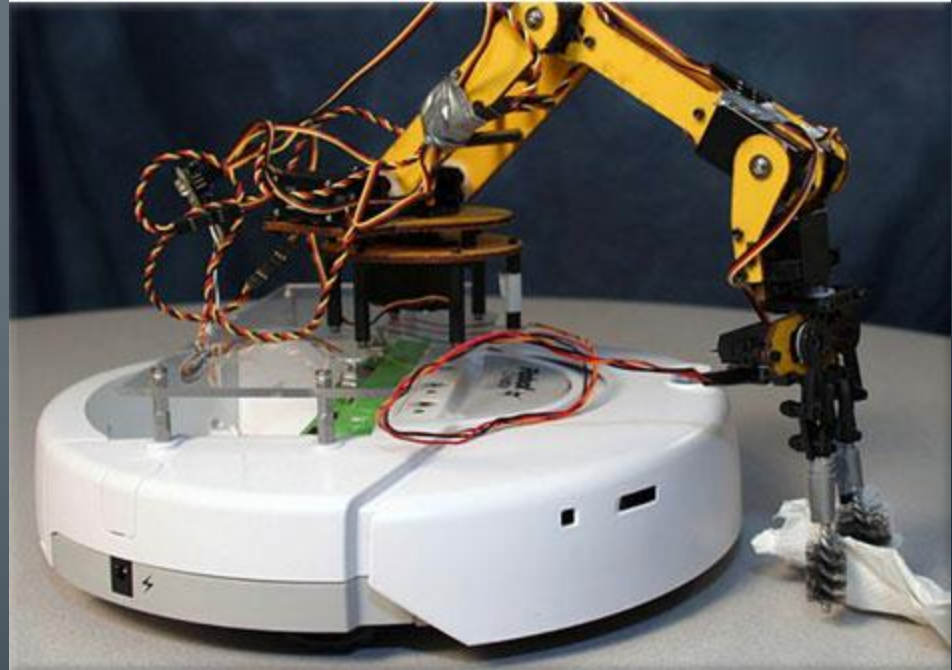
Structure

- Another great benefit of using the Create as a base is its structure.
- It is a short, squat, heavy cylinder and that is useful for its stability.



Structure(continued)

- Because it is short and heavy, it will stay upright, even when tall, heavy components are attached to it.
- This stability was evident when we attached a claw arm to the Create that would have made a CBC-only robot top-heavy.



Structure(continued)

- The fact that the Create is circular makes it easier to maneuver, and the circular shape has also proven to prevent the robot from getting caught on the game board or another robot if 2 robots are operating in close proximity of each other.



Sensors

- The Create also has 2 very useful sensors: the bump sensors and the cliff sensors.
- The bump sensors are useful because they can act as an indicator that tells when the Create has hit a wall.



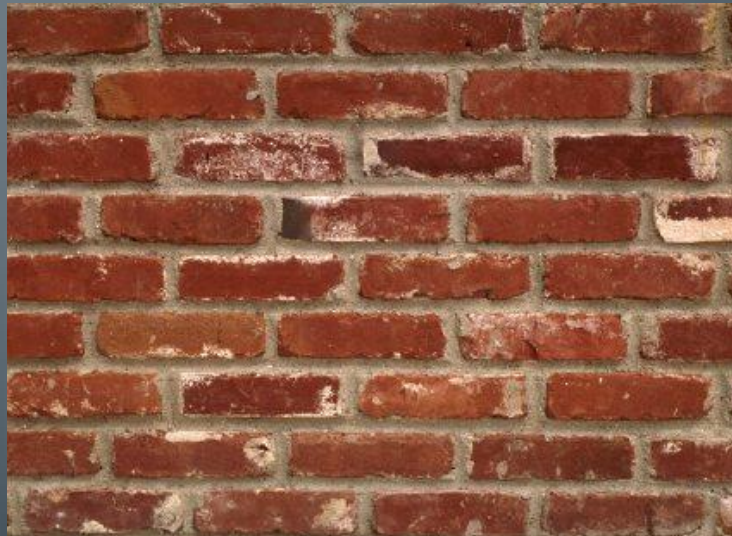
Sensors(continued)

- The bump sensors have become a major component of all our Create-based robots because it can easily be used to trigger the next step in a sequence.
- Mechanically, it is easier to use the bump sensor than try and design a similar sensor on the back of the Create.



Sensors(continued)

- For instance, one of the steps of one of our Create competition robot prototype was for it to drive until it hits the wall, then turn and pick up a piece of paper.
- This task would be much harder to complete without the bump sensor or if we had to make our own bump sensors.



Sensors(continued)

- The cliff sensors are useful because they are a failsafe.
- With the cliff sensors, the Create never runs off the game board and gets damaged.
- As a result, we have spent less time rebuilding the robots than we would if the Create did not have cliff sensors.



Ease of Programming

- The Create is easy to program, as well.
- Because the motors that power it are in the middle of the unit, the create can turn easily by programming one motor to turn one way and then the other to turn the same value in the opposite direction.



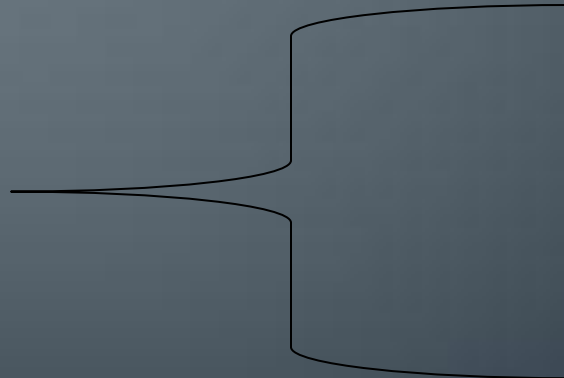
Ease of Programming(continued)

- Because of this ability to turn and because of the symmetry with the motors the programmer does not have to work as hard trying to get the robot to go straight or to turn the direction he or she wants.



Ease of Programming(continued)

- Conversely, with a CBC-only robot there is often some difference in the power of the motors, so that the same programmed value for both motors will produce a different true speed.
- This inconsistency, thankfully, does not occur in the Create, which can reliably go straight when the same values or speed are entered into both of its motors.



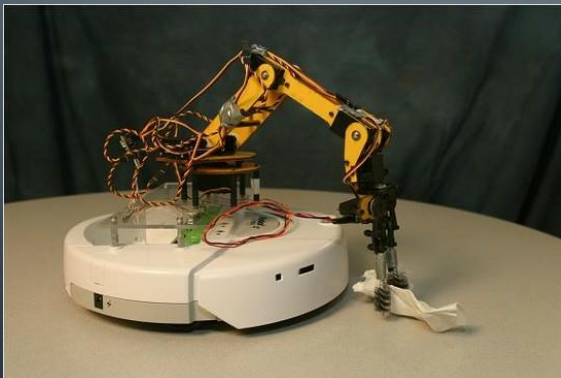
Why We Use the Create

- These features and qualities all work together to make the Create a consistent and reliable base for a robot.
- It is pre-made, sturdy, maneuverable, and has sensors and motors that make it easy to program.



Why We Use the Create(continued)

- Because of all these great features, it has been an essential design component for our team every single time that we have used it.
- With it, we have built many different robots with many different purposes, such as a kind or scooping robot, a robot that grabs things with a claw, and one that does both.



Why We Use the Create(continued)

- We were able to successfully build all of these robots on the Create because of its versatility, and we will continue to use the Create in the future because of this versatility.

