

Robotic Swarm



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Introduction

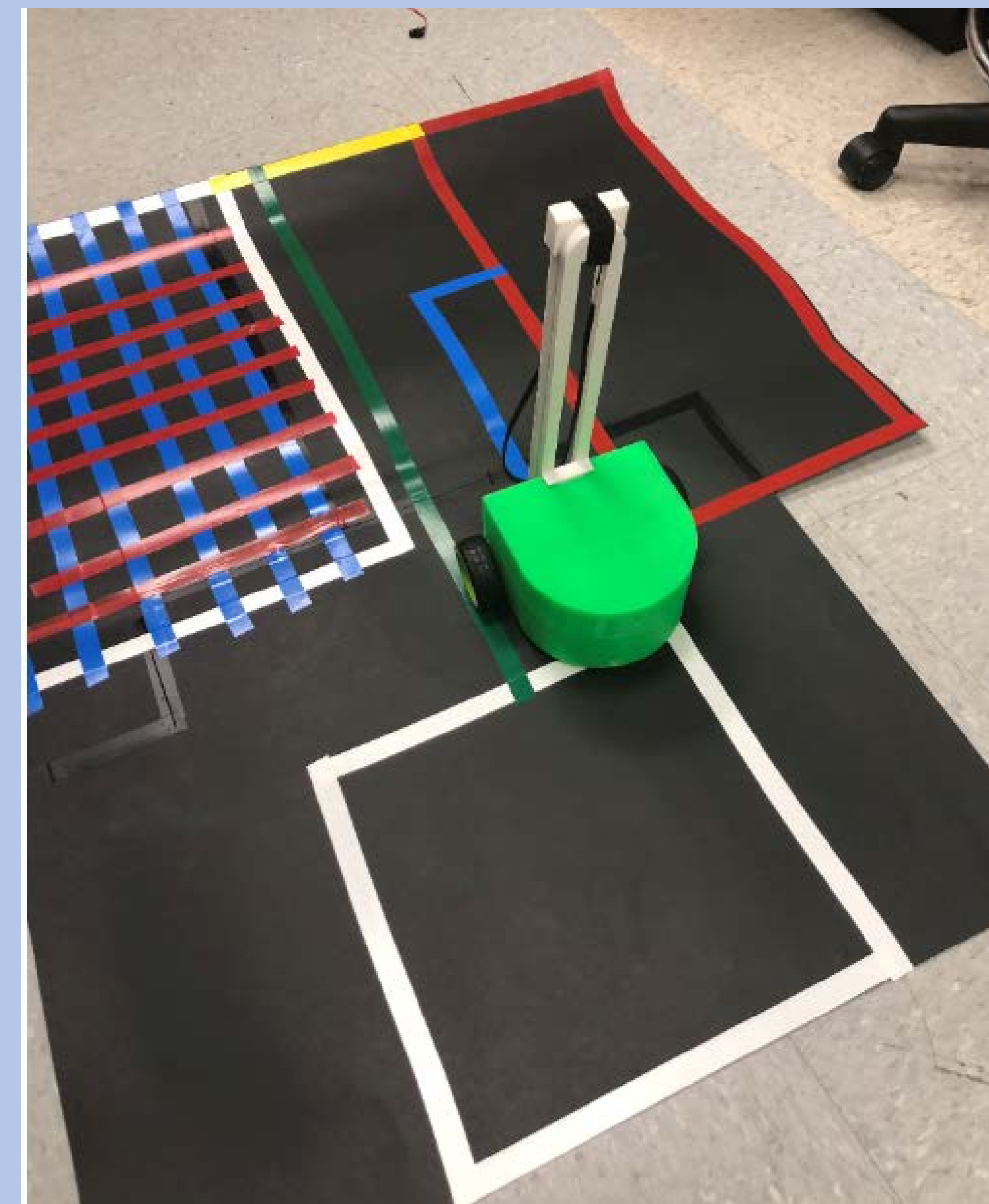
A robotic swarm is a group of robots that can work collaboratively to achieve an end goal. This robotic swarm has the goal of building simple structures out of small wooden blocks. The minimum specification is to build at least one robot that is able to do the following:

- Pick up small playing blocks and place them in a 10x10x3 pattern specified by a programmer
- The robot will be able to recognize the “build area” and the “materials area”
- The robot will be autonomous, and have some error checking abilities
- It must be able to receive all three levels of data at once, store that data, and indicate that it has stopped building.

Results

The produced robot features:

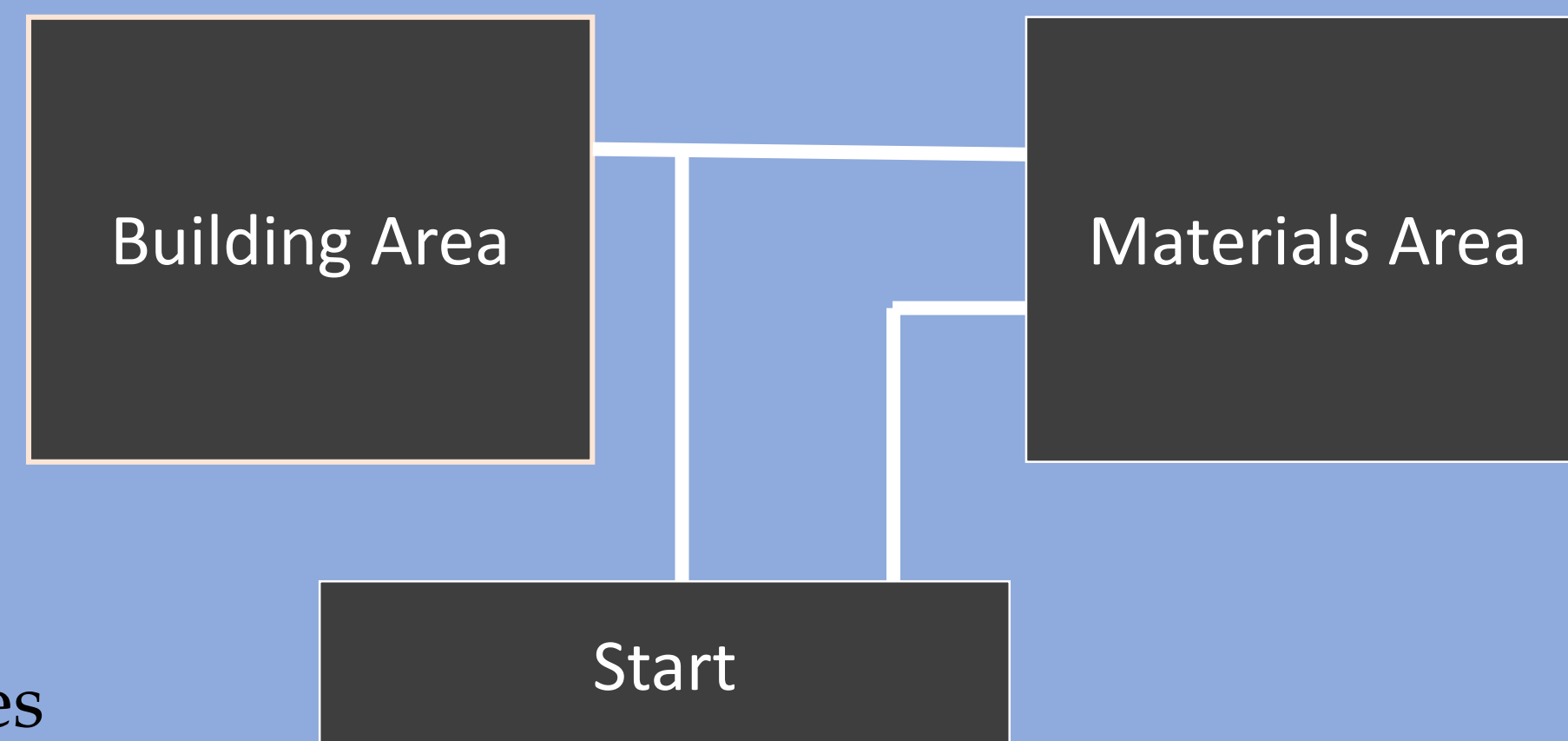
- IR sensors for communication with similar robots
- A custom lifting mechanism that successfully lifts blocks into the correct place



The robot is able to successfully build simple structures – each time the structure is built the way that it is built is unique.

Design

- Hardware
 - Base contains all of the hardware other than parts for lifting
 - Motors for Wheels
 - Microcontroller
 - Batteries
 - Lifting consists of two pieces
 - Horizontal Lifting
 - Vertical Lifting
 - Horizontal lifting account for error in movement
- Software
 - Continuously checks for IR signals from other robots
 - Holds all building information
 - Robot builds buildings in sections



5	5	5	5	5	5	5	5	5	5
5	4	4	4	4	4	4	4	4	5
5	4	3	3	3	3	3	3	4	5
5	4	3	2	2	2	2	3	4	5
5	4	3	2	1	1	2	3	4	5
5	4	3	2	2	2	2	3	4	5
5	4	3	3	3	3	3	3	4	5
5	4	4	4	4	4	4	4	4	5
5	5	5	5	5	5	5	5	5	5

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