Development of an Autonomous Omnidirectional Robot
Jeffrey G. Cumber and Preston R. Johnson
Robert E. Lee Engineering Academy
cumberj@duvalschools.org

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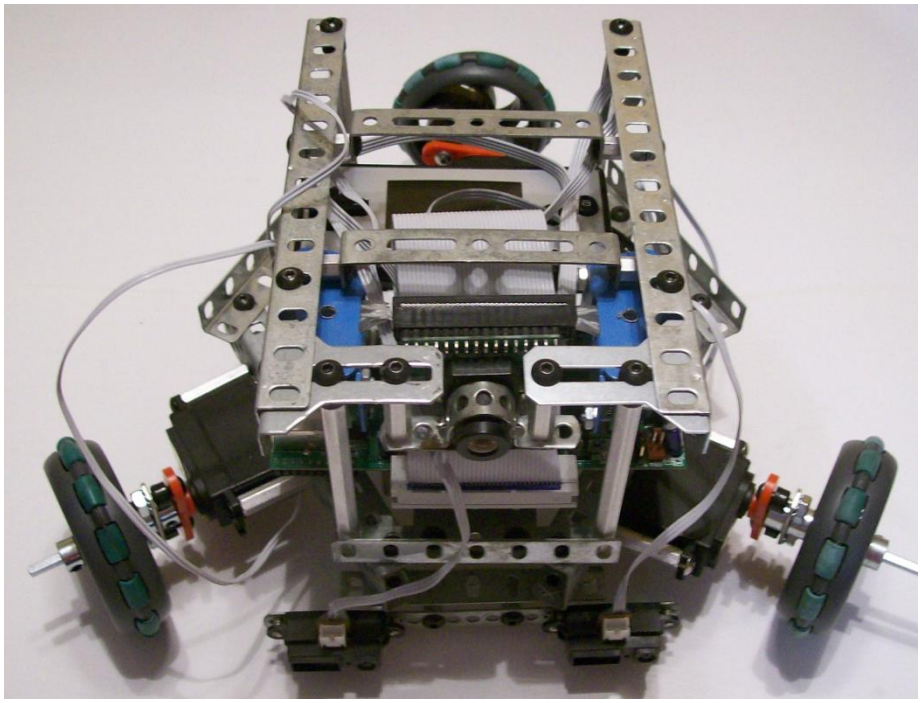
1. **Abstract**

Omnidirectional robots are robots that can move instantaneously in any direction from any heading without having to turn first. These robots are also called holonomic. A holonomic drive platform is advantageous in robotics because it allows faster response to changing environmental circumstances. These robots can "slide" out of the way without having to wait for the base to turn to a particular heading. In contrast, robots such as the iRobot Create must take time to turn and then move out of the way of a potentially undesirable condition. We developed an omnidirectional robot that uses a Botball XBC as its controller.

2. **Description**

Our robot is of the three-wheeled variety. We chose to make it face-leading to facilitate the placement of sensors at the front and to enable the robot to get closer to objects. It has a camera for color tracking, two forward-mounted IR rangefinders for object detection and avoidance, and two side-mounted sonar modules for wall detection and following. Other sensors may be added as needed.

3. **Photo**