Stair Master

The purpose of this lab is to climb real human size stairs with a robot using the NXT and Lego set only. The grading will be based on how high you can **carry** a golf ball up the stair case. Throwing is not allowed, but arms that are attached to the robot are permitted. The location of the golf ball at the end of the run will determine the stair the robot has reached. For the golf ball to be "on" a stair, the entirety of the ball must have crossed the frontmost vertical plane of the stair.

Grading will take place on the staircase outside the REL in the Newell Simon atrium. There will be grading runs on both flights, followed by a head-to-head competition round, time permitting. Your grade will be based on the number of stairs your robot is able to climb, and has nothing to do with the actual place in the competition. Climbing 3+ stairs is worth full credit, regardless of competition performance.

The competition is a head to head tournament, with brackets determined by the results of the grading. The robot that carries the ball to the nth highest point with be nth seed. In case of ties, the faster robot will win. The top four teams will be placed on the stair case in groups of two, and the robot that climbs the farthest in 1 minute will be the winner.

Other rules:

- Only Lego parts and motors from the kits and the NXT may be used.
- You may not modify the ball in any way, and it must not be enclosed. The ball is not enclosed if a TA is able to pick it up off of the robot without moving any part of the robot.
- The robot must be within 12 x 12 x 18 inch size.
- The robot cannot throw the ball, however the robot can expand and extend the ball away from it after the trial has started.
- The robot must be autonomous, though input prior to the run is allowed (a la dead reckoning).