

BALL BOT

Brief description and mechanism:

It is a spherically shaped robot controlled by 3 motors. The bot would have 2 diametrical-parallel rings which guide the motor to change the direction of the bigger motor. The motor rotates the mass inside (mainly the smaller two motors and the ic board). The ball moves forward due to this. The smaller motors would change the direction by rotating on the rings.

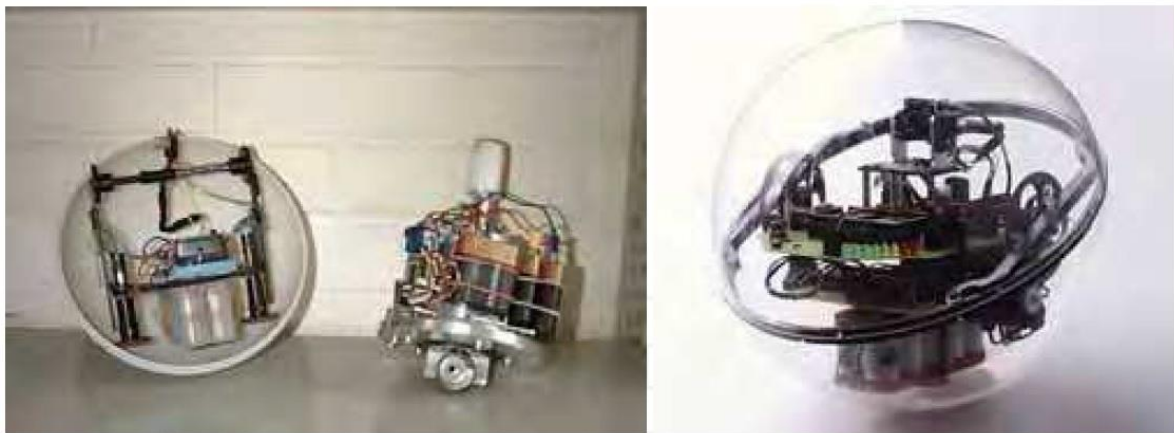


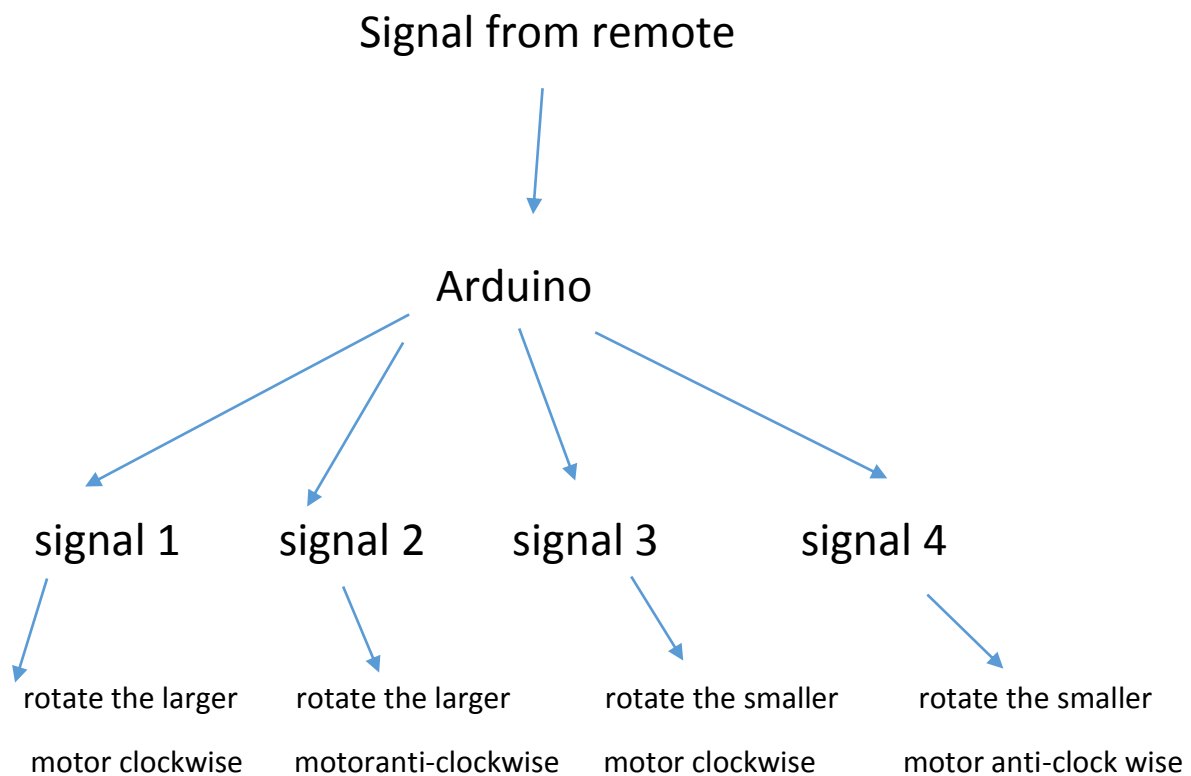
Fig. 15. 2nd, 1st, and 3rd generations of the Rollo (Image: TKK)

Arduino coding part:

There would 4 types of signals/inputs namely:

- 1) To rotate the larger motor clockwise.
- 2) To rotate the larger motor anti-clockwise.
- 3) To rotate the smaller motor clockwise.
- 4) To rotate the smaller motor anti-clockwise.

Flowchart for arduino coding to motors:



For this part arduino coding is not required ,but we were planning to include 2-D mapping of surface if the time permits and it will require an arduino the coding of it can be done later. The idea is:

The bot would hit an obstacle and point its position in a graph by setting the origin to be the starting point.

Please refer to the link:

<https://docs.google.com/file/d/0BwC4yilsvXqtS21oSG0tNnN0ZXc/edit>

TASK

TIME REQUIRED

-> SOLIDWORKS MODEL MOST	3 DAYS AT
-> BUYING MATERIALS	1 DAY
->FABRICATE SPHERICAL SHELL AND TWO METAL RINGS	2-3 DAY
->WORKING ON MECHANISM DAYS	10-12
->FABRICATING THE FINAL BOT	7 DAYS
->FURTHER IMPROVEMENTS IN CONTROL /BUFFER TIME	10 DAYS
COST OF COMPONENTS	
-ONE HIGH POWER MOTOR	500 MAX
-TWO LOW POWER MOTORS	2*120
-IC AND REMOTE	1000 MAX
-OUTER CASING (PREFERABLY TRANSPARENT) & INNER RINGS	1500-2000
-MISCELLANEOUS (NUTS,BOLTS,LIGHTS,ETC..)	500
-SENSORS(IF TIME PERMITS)	1000 MAX
-Battery	1000max
TOTAL COST	~6000RS

WHAT DO WE EXPECT TO LEARN FROM THE PROJECT

- GYROSCOPIC PRINCIPLES -PROGRAMMING
- ELECTRONICS(CIRCUITS)
- DESIGN(RINGS HAVE TO BE SPECIALLY
FABRICATED)
- TEAM WORK