

# Team 05 - Caffeinator



Team Members:  
 Eric Vuong – Project Manager / Software  
 Gwen Pang – Documenter  
 Yu Chen Xu – Hardware Manager  
 Adrian Pan – Software Manager  
 James Fuh – Software Manager  
 Yutian Zheng – Hardware

## Objective

The objective of this project is to develop an autonomous robot using the Lego Mindstorms Kits. This robot needs to be able to localize anywhere within the start area. It will then travel to the shooting area while avoiding obstacles and shoot at 2 targets with 3 ping-pong balls each. After shooting, it must return to center of the start area (0,0) and face the north.

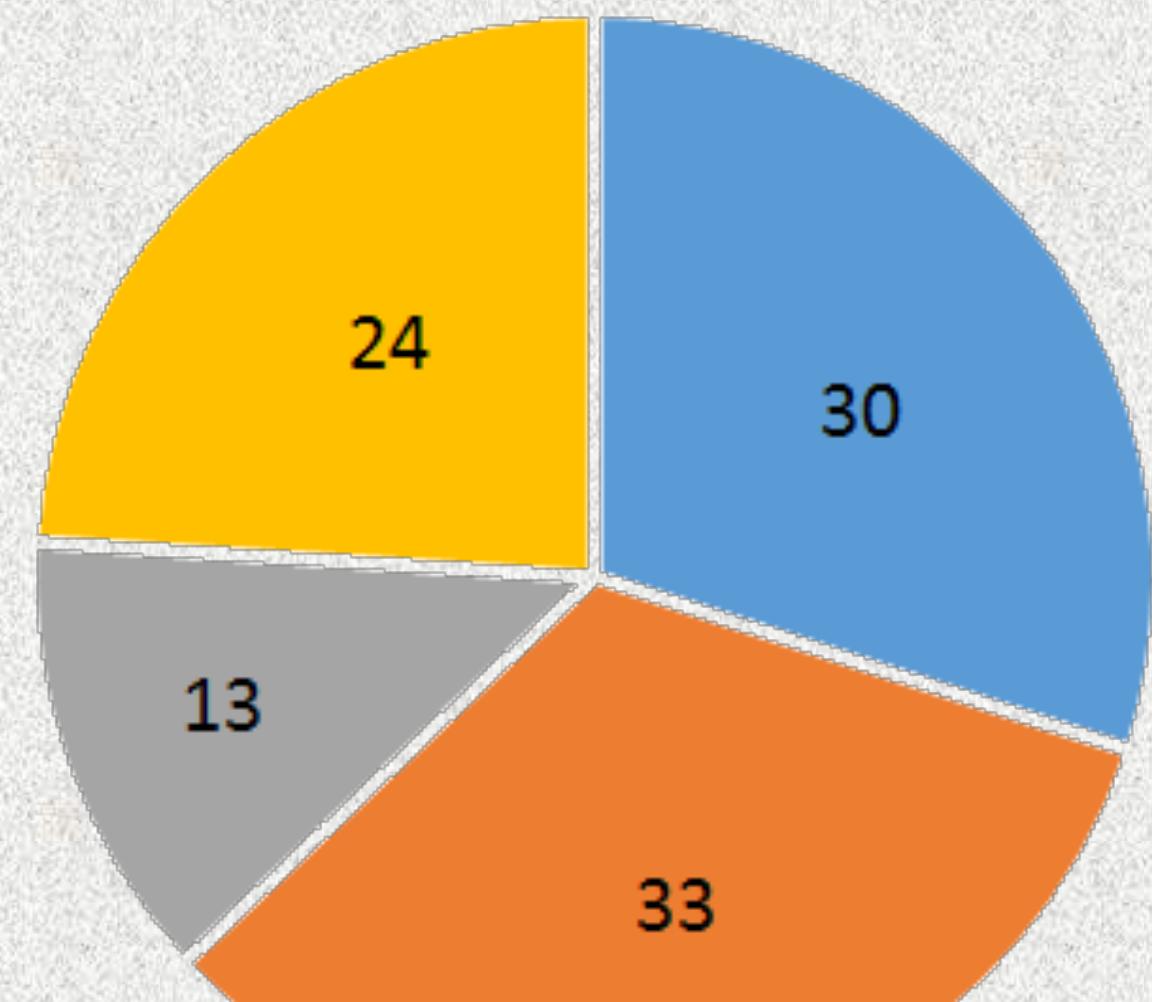


## Competition Floor



## Task Distributions

- Documentation
- Hardware
- Software
- Testing



310 used / 360 allotted hours

## Hardware & Software

Built with LEGO Mindstorm Kits and designed in a **small, solid** and **compact** structure, Caffeinator is able to accomplish some fantastic tasks by the application of engineering principles.

Projectile Range: 150 +/- 5 cm

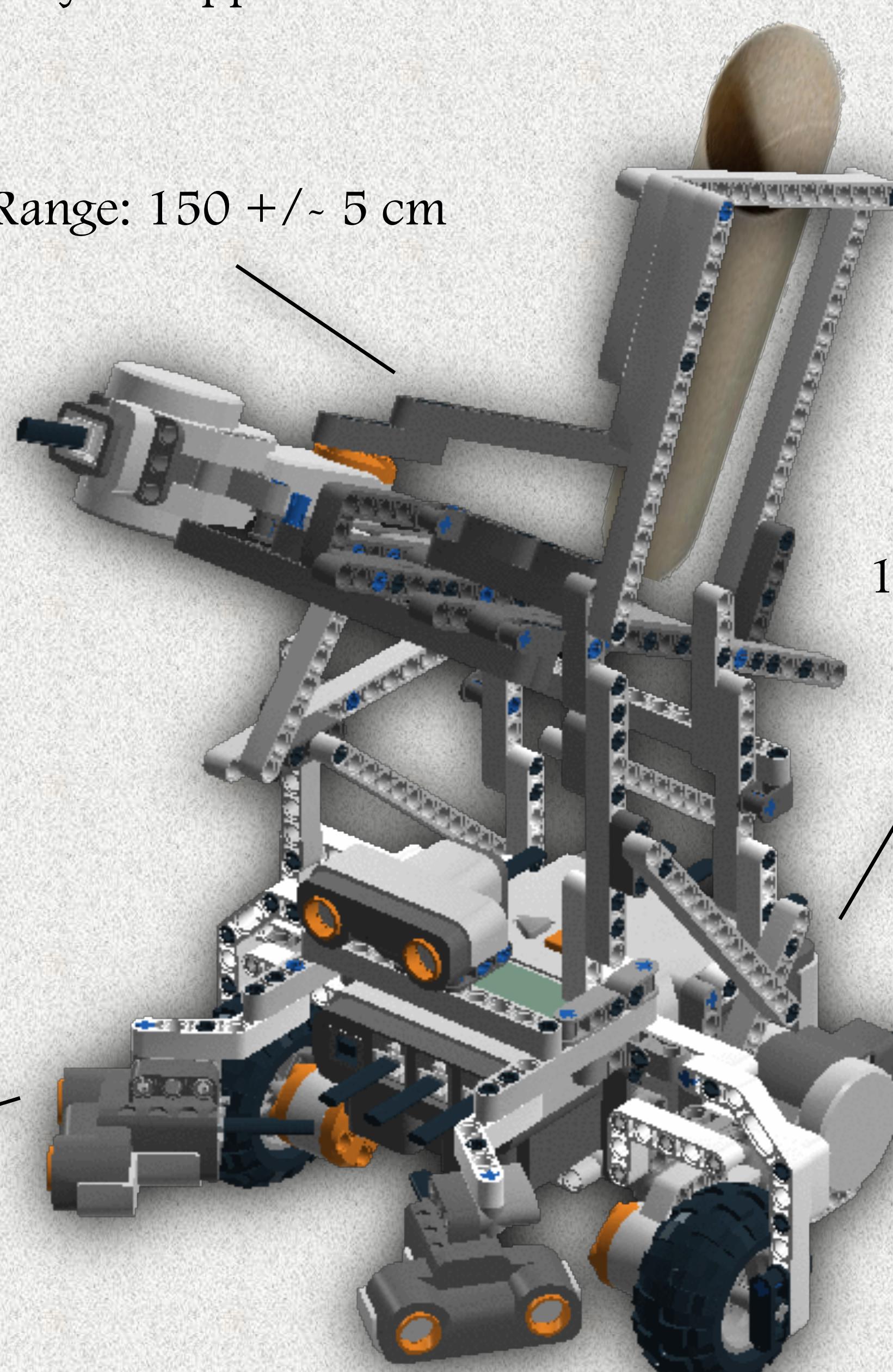
By using the **gravity** force, the ping-pong balls load automatically one after the other through a cylindrical tube attached to the robot.

3 Ultrasonic Sensors

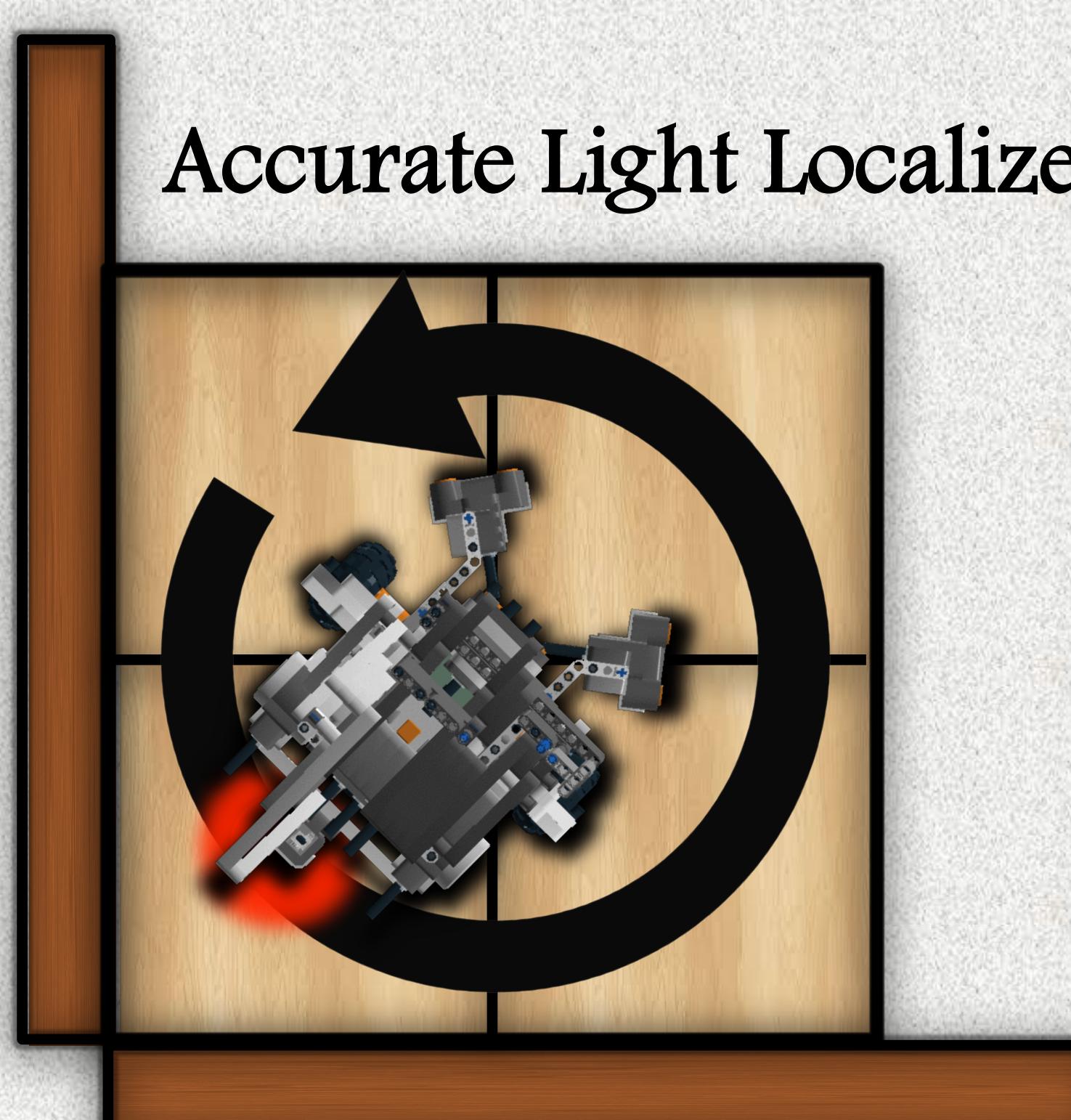
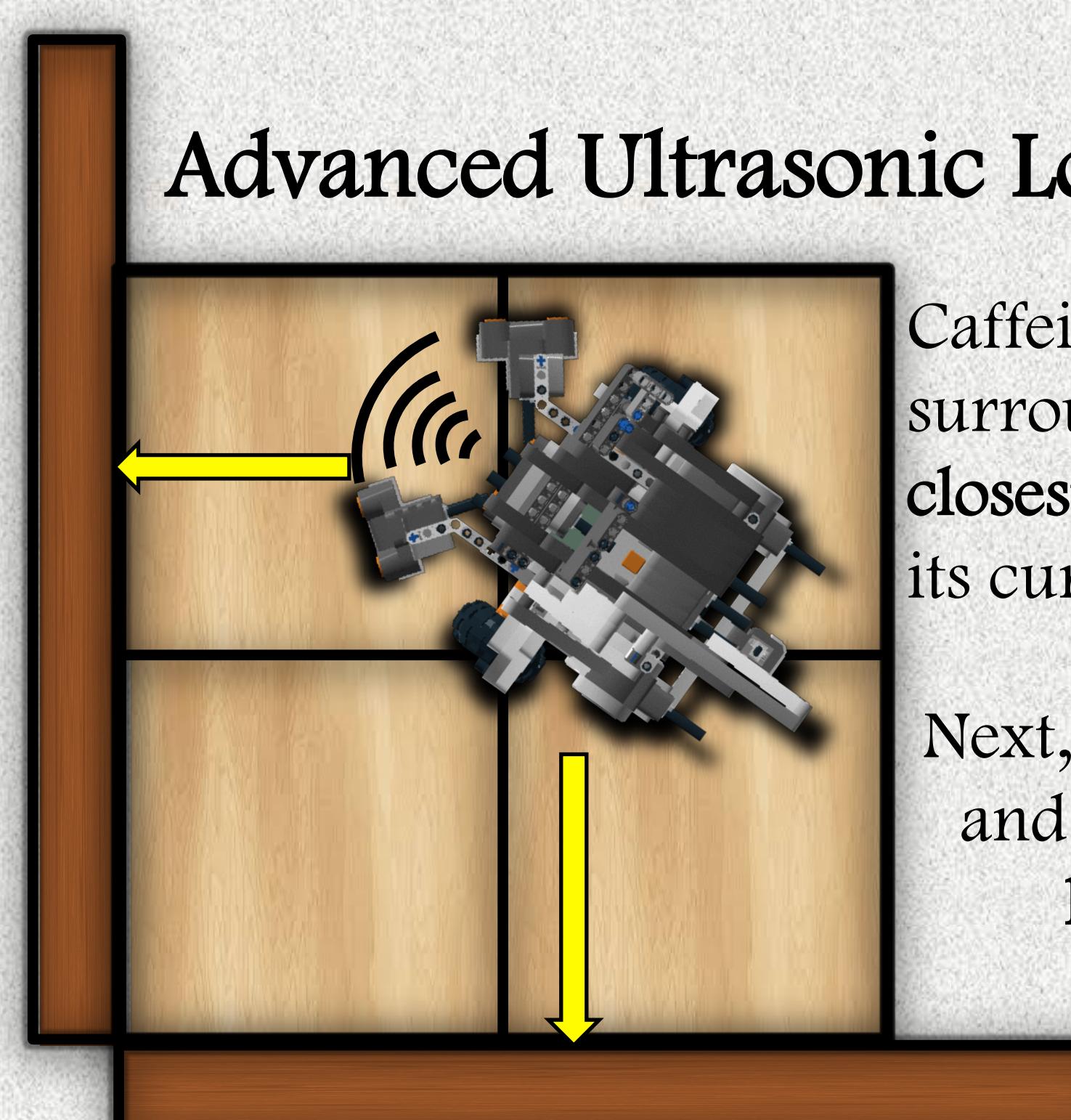
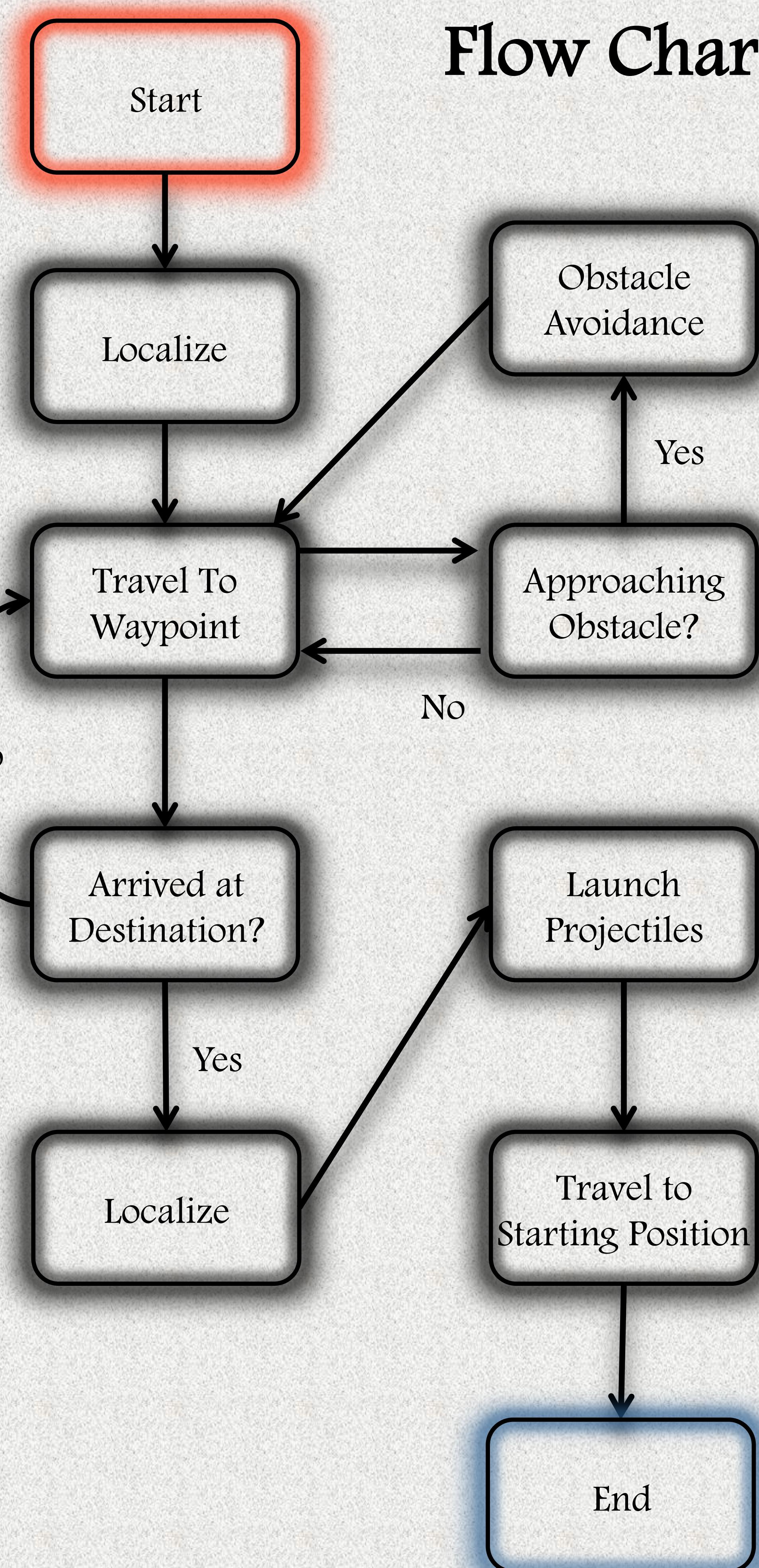
1 Light Sensor

2 Motor for flexible Navigation and Odometry

By using the **rotational** force of a LEGO motor, the sticks in dark gray will hit the ball in the resting zone, resulting the launching of the projectile.



## Flow Chart



**Safe Obstacle Avoidance**  
Full 180 degrees coverage

