



Alecia Camillo

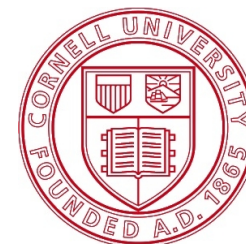
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# The 99% Robot

## Mechatronics

### 2011



# + Objective

- To either push an opponents' robot out of 3-foot diameter or disable it within the arena in 3 minutes or less.





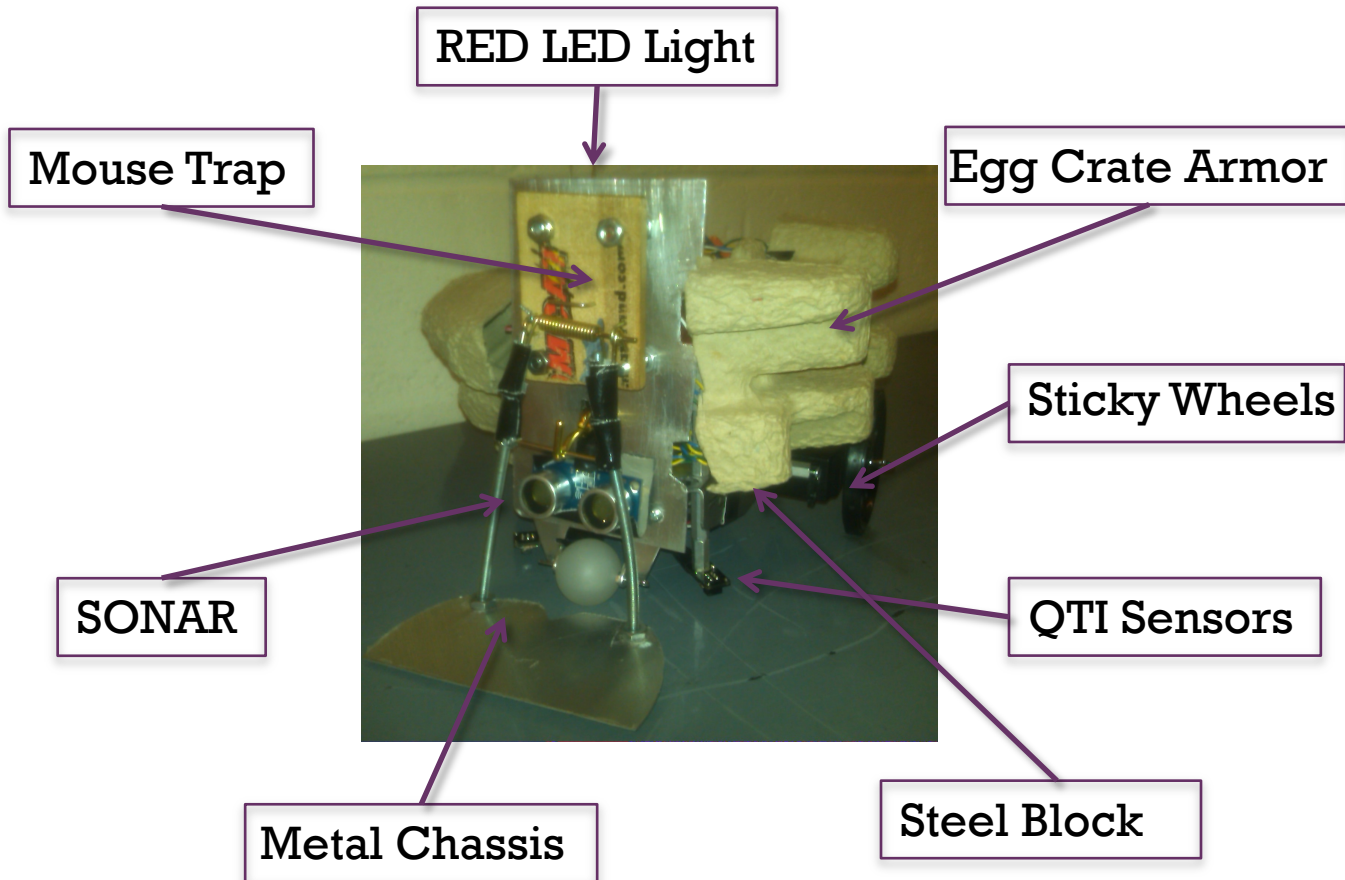
# Constraints



- To stay within the ring
- IR sensor under the chassis
- When pushed out of the ring, robot is to shut down and red LED should turn on.
- At least one offensive strategy
- Less than 1 Kg
- 20 ×20 cm dimension
- \$20 Budget for additional parts



# + Overview of “The 99% Robot”



# + Sensors

## ■ QTI sensors

- Three QTI Sensors
- Two front QTIs used to keep our robot within the ring
- Middle QTI used to shut off robot when out of the ring

## ■ SONAR

- Used to detect and locate opponent
- Calibrated to a certain length
- Quick Response



# + Mechanical Features



- Two Motors

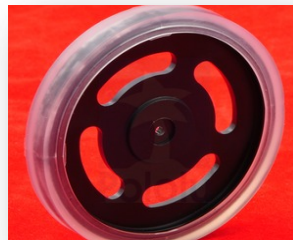


- Metal Chassis

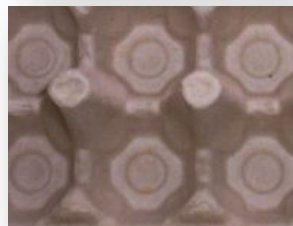


- Mechanical Mouse Trap Flipping Device

- Sticky Tires



- Egg Crate Armor



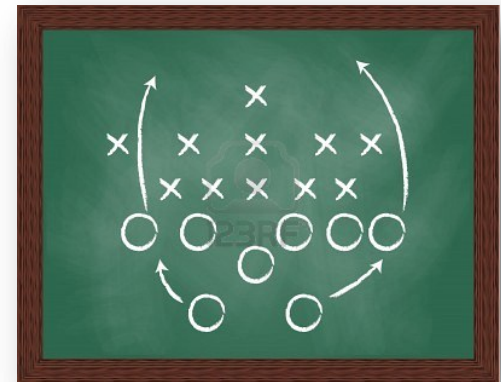
# + Offensive Strategy

## ■ Mouse Trap

- Triggers when pressed by opponent
- Has the potential to lift/flip opponents robot
- Widened Wheel Base to prevent flipping
- Light
- Fits within the dimension constraint

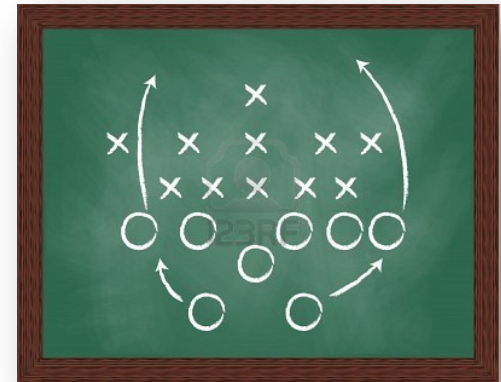
## ■ Sticky Tires

- Increases traction
- Increases Power



# + Defensive Strategy

- Egg Crate Armor
  - Strategic Disguise
  - Deceptive depth
  - Attempts to confuse opponents Sonar
  - Buys time for our robot to find opponent
  - Lighter than foam
- Strategic Steel Block
  - Under the chassis in the center and back of our robot
  - Weighs it down and creates stability
  - Prevents our robot from flipping when mouse trap is triggered
  - Makes it harder for an opponent to push our robot
- Easy access to wires
  - Allows us to be able to fix the robot within rounds and quickly





+ Questions?

