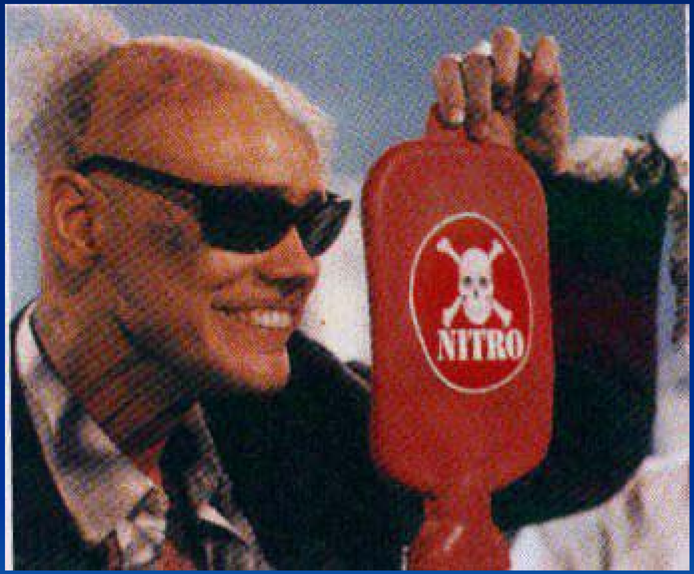
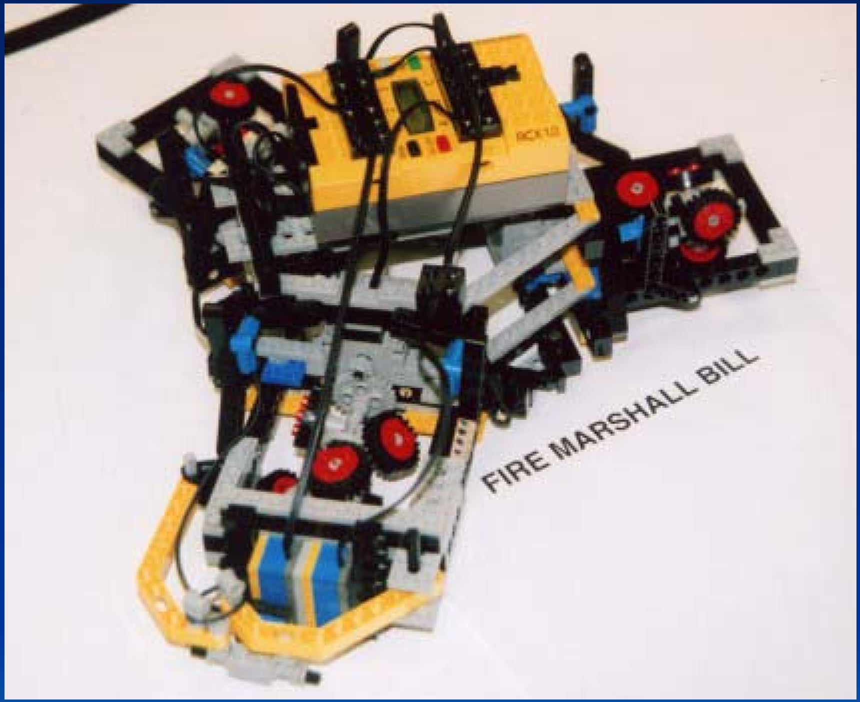
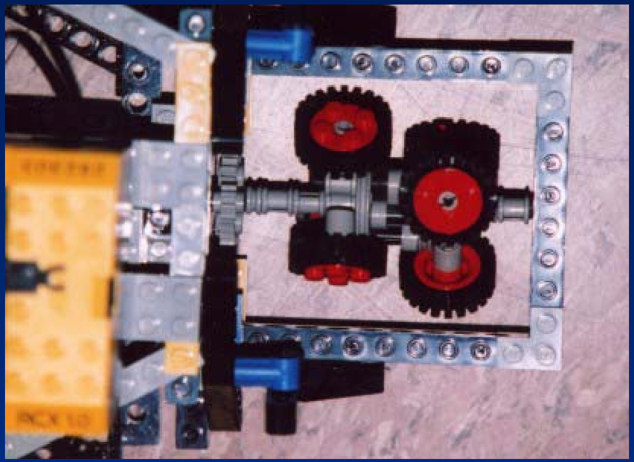
Fire Marshall Bill



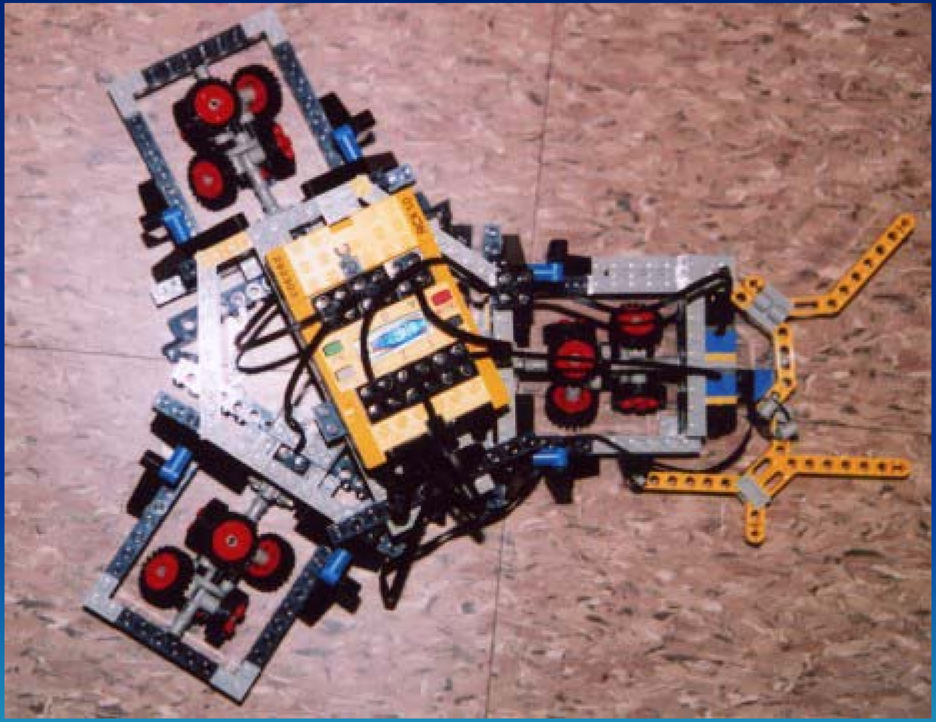


Todd Michelson and Steven Luksenberg

The Basic Design



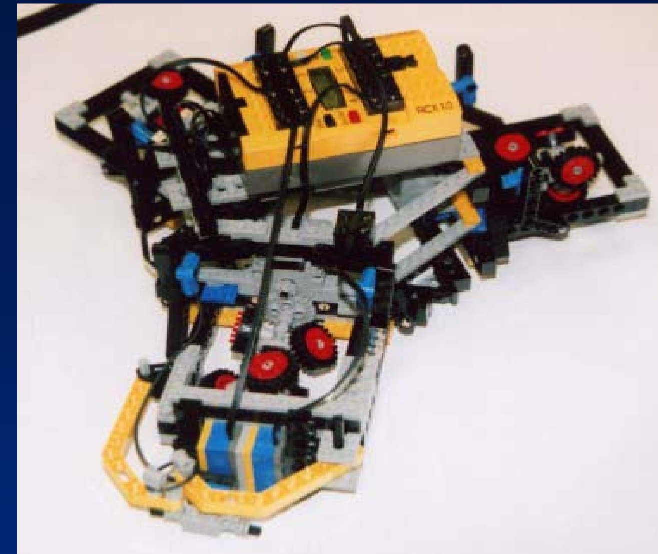
- Wheels cannot work in a normal fashion. Multiple wheels must rotate around an axle to provide movement.



- The wheels and axles must be positioned in a triangular arrangement, 120 degrees apart from each other.

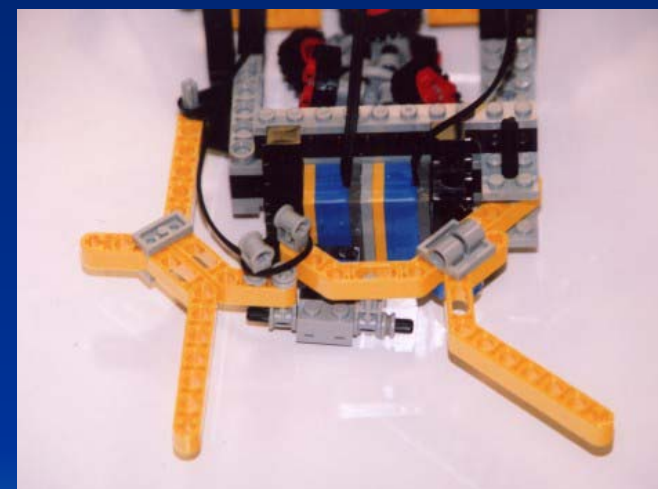
- The back two sets of wheels moved the robot forward, while the front set allowed the robot to turn whenever the line curved.

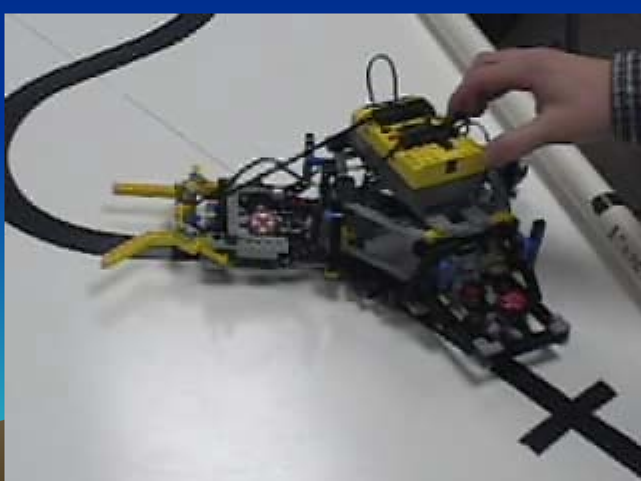
Bumper Trouble



• In our original design, the bumper did not always trigger the touch sensor

•We added a few peripherals that ensured that no matter the angle, the touch sensor would be triggered.



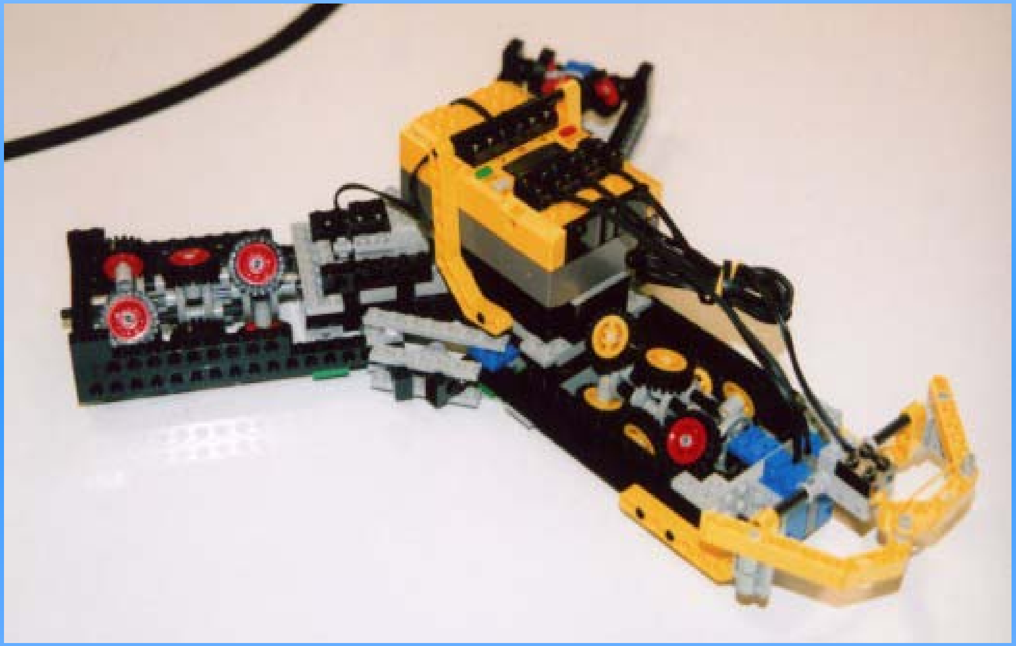


Not the fastest, but one of two most reliable.

one of a few that never had pieces fall or break off.

After speed optimizing, placed respectably.

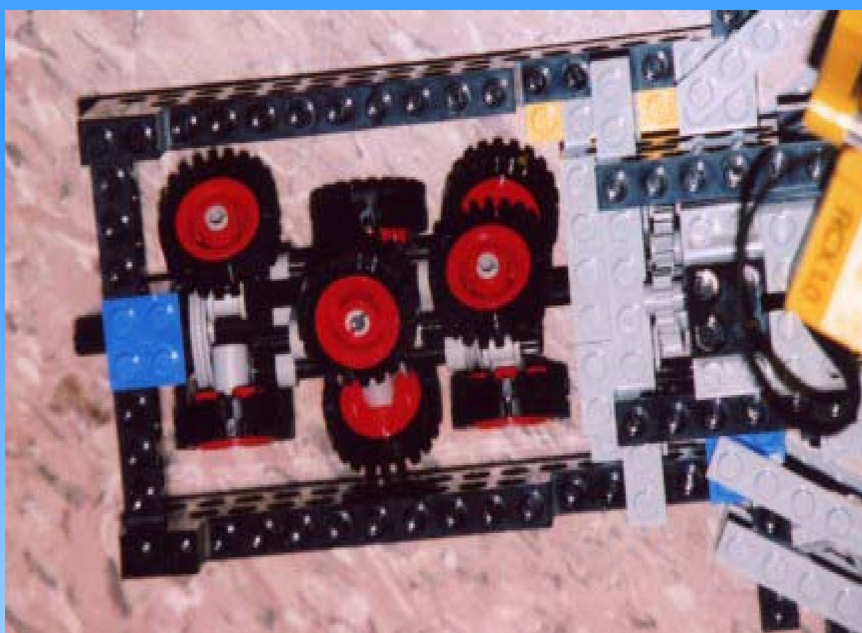
“The Terminator”



By: Mark Marzen, Michael Resnick, Michael Shea

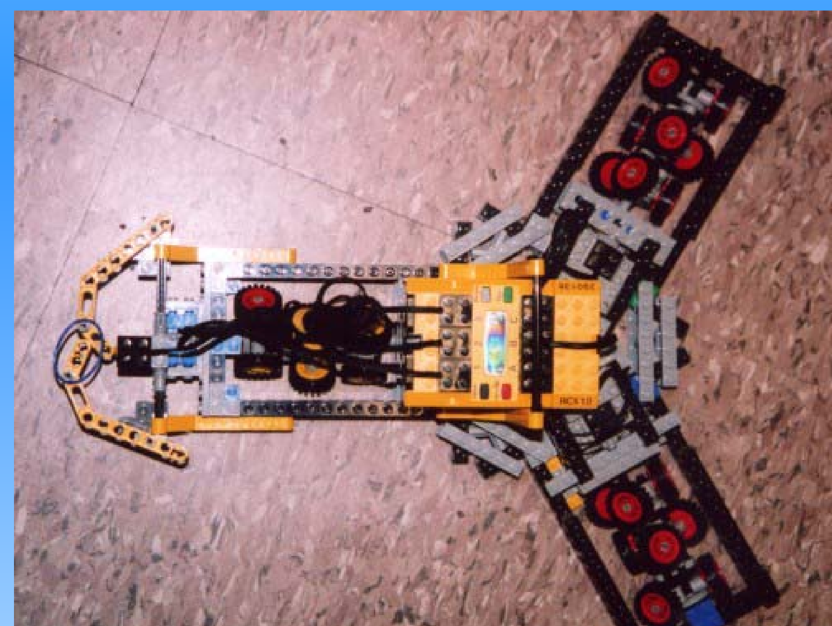
WHEELS DESIGN

- Decided to use three sets of wheels with three wheels each.
- Creates more of a circular surface.
- Smoother ride with more surface area.



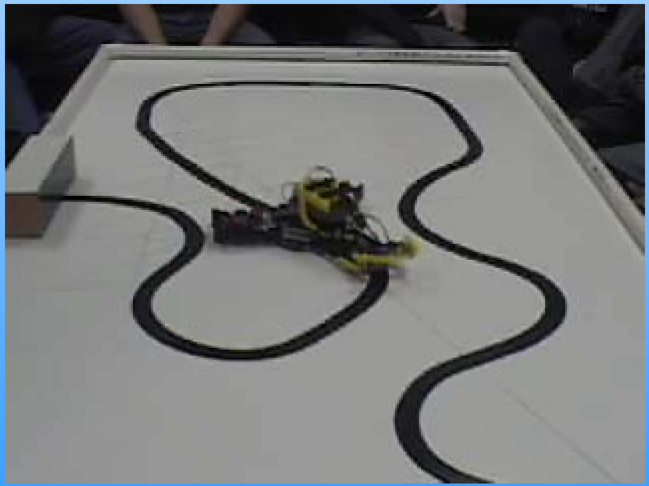
MECHANICAL DESIGN

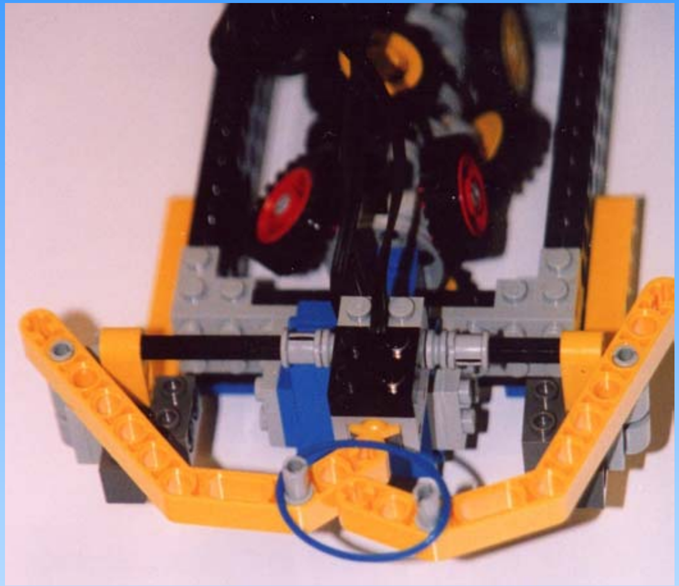
- Mechanical Problem: Flexibility of Axles
- Axles would bend due to weight of RCX = Only one wheel touching.
- Solution: Cage built around axle and attached to frame.



PROGRAMMING

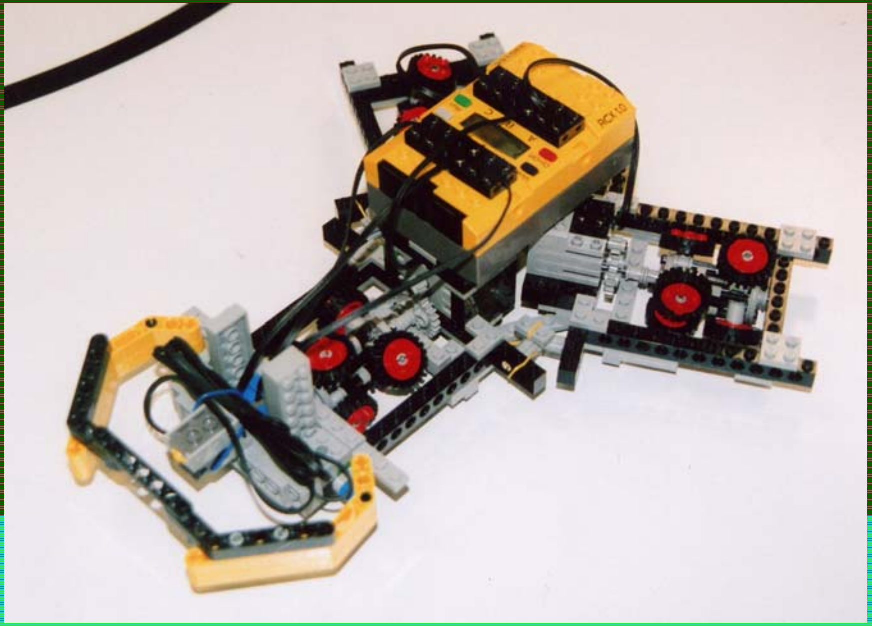
- Programming Problem: How to tell Robot which way to turn once off track.
- RCX couldn’t tell which sensor saw white first.
- Sensors assign values to different colors.
- Solution: Assigned a variable with a certain value indicating which senor saw white first.





- Last minute change: Gear ratio (Large on top, small on bottom)
- Increased time by 7 seconds.
- Final time: 36.66 seconds

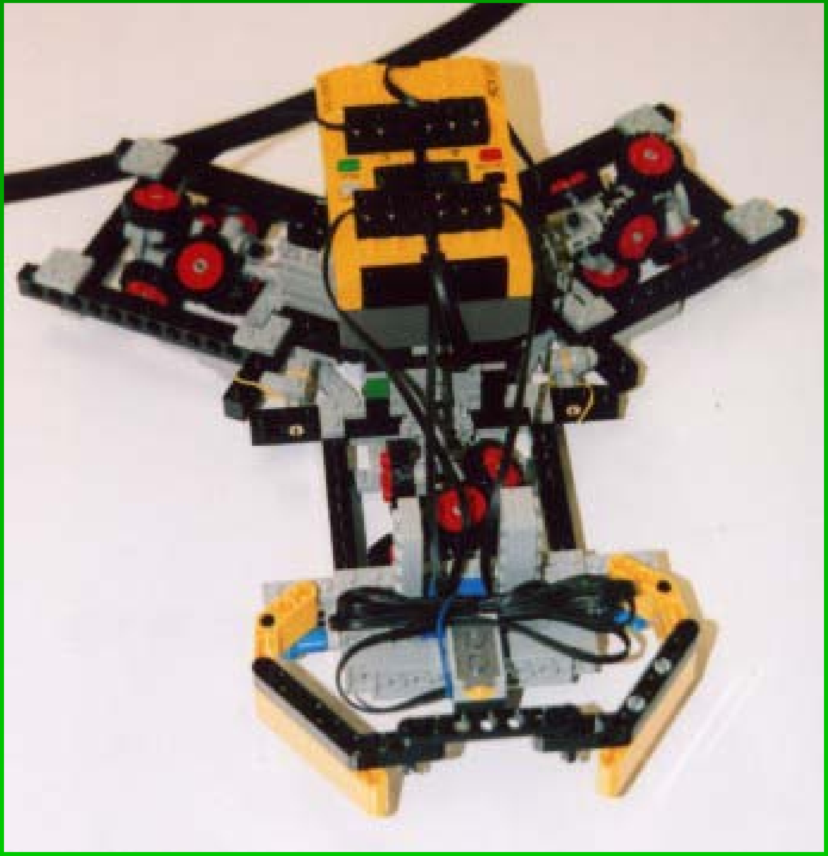
RCXtreme

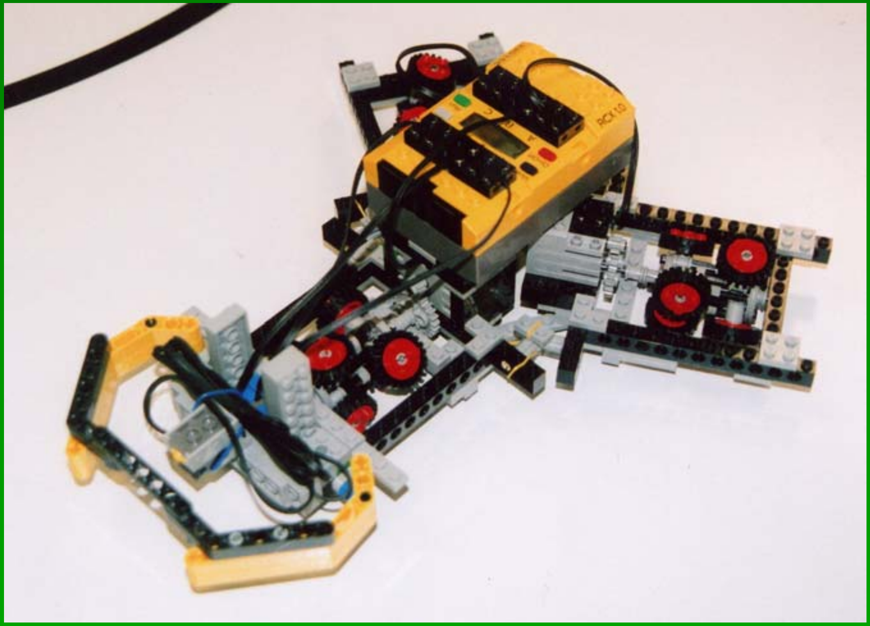


Lauren Noce, Steve Seemuller, Brett Leister

Light Sensor Issues

- Light sensors were sensitive to placement
  - Used an adjustable "upright" in order to get optimum height above table.



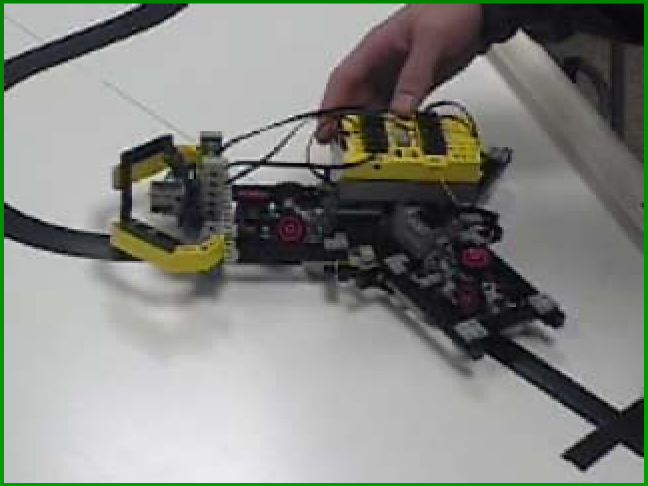


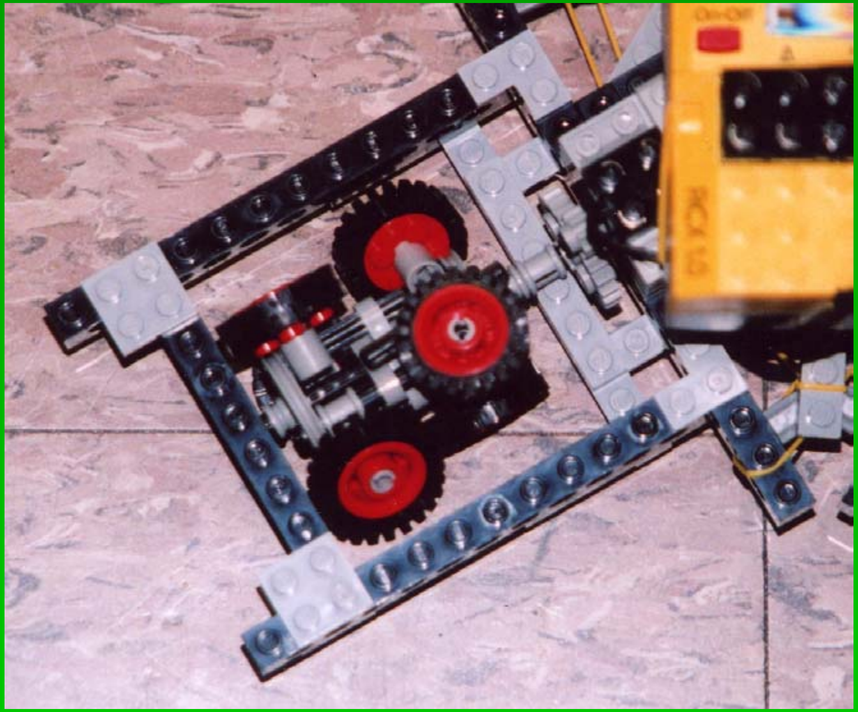
Bumper Problems

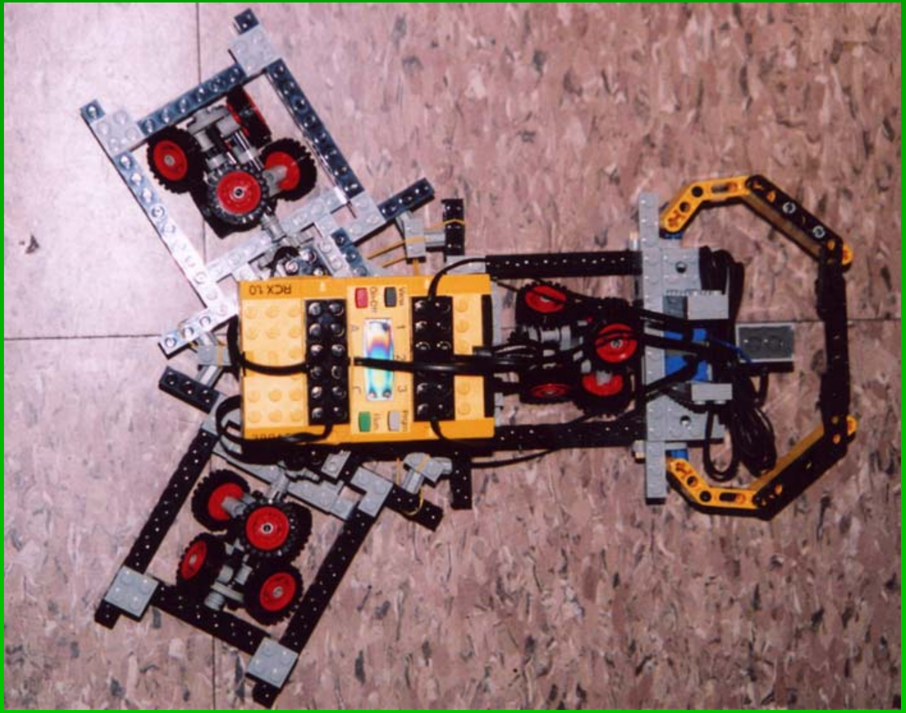
- Needed a bumper that would work under all conditions
- Tried many different designs
  - Final design was "stolen" from another group.

Structural Faults

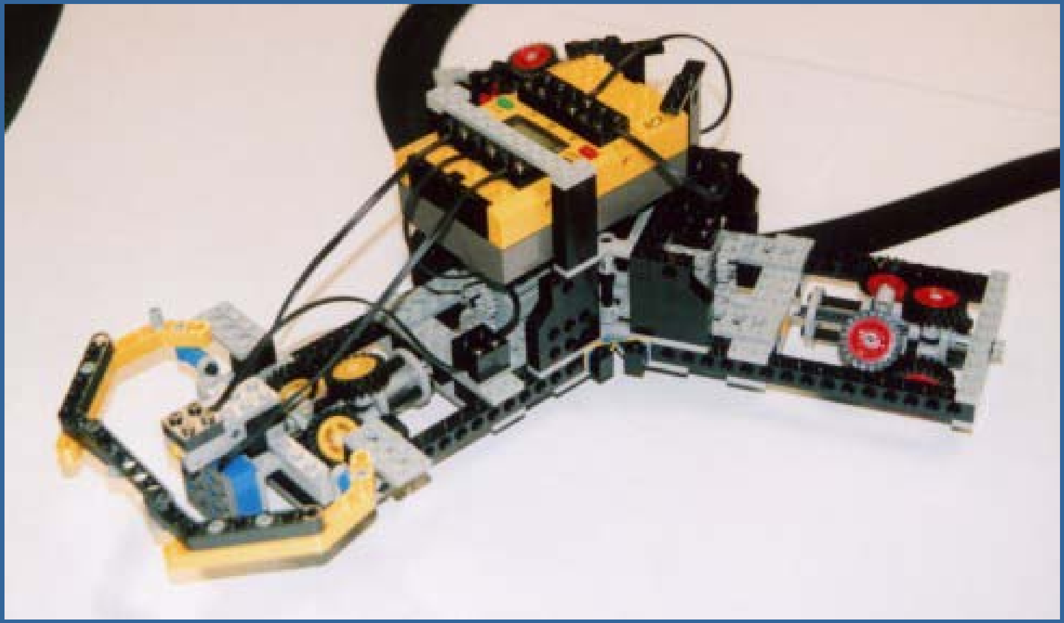
- Front motor kept popping off
- Bottom supports kept breaking off
  - Too much vertical tension loaded onto them







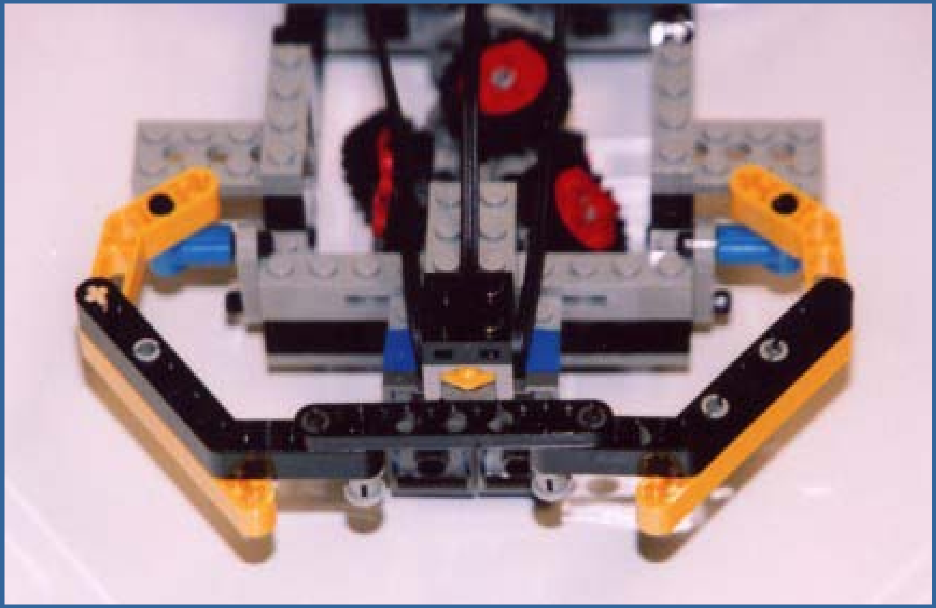
The Jittery Crab



By Peter Marchildon and Marco Salaverria

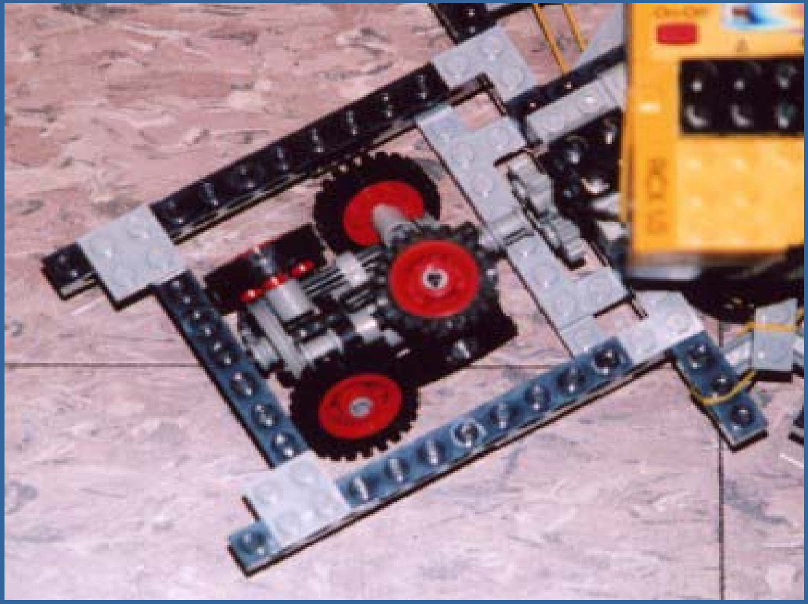
Front Bumper

- Our bumper was an original design. It allowed the robot to hit the wall at any angle and still have the sensor pressed. The arms on the front are connected with movable pieces and direct the motion of the arms towards the sensor.



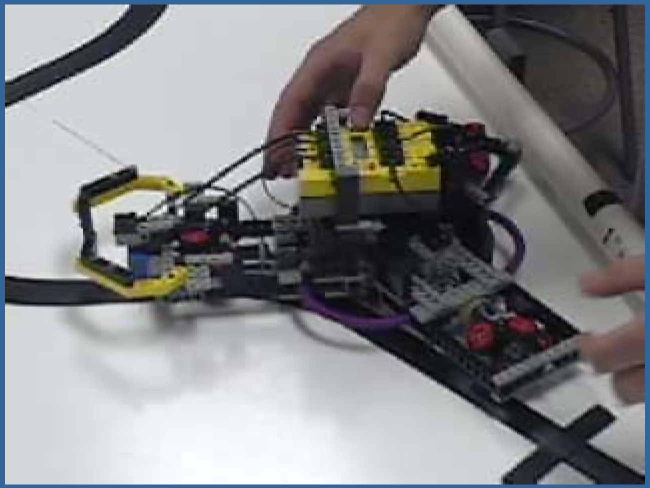
Wheels

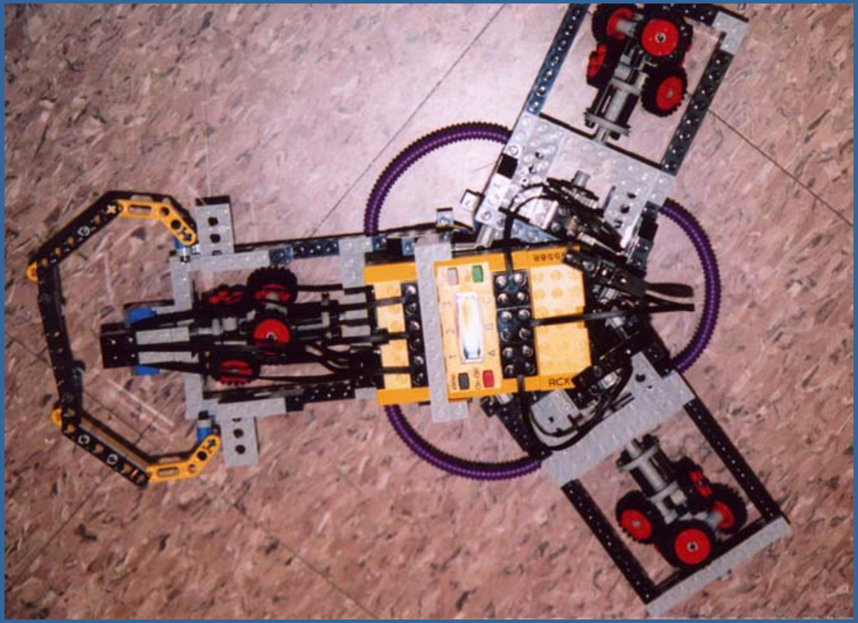
- The wheels were modified a few times due to the amount of slippage that occurred when going at higher speeds.
- At the end we were able to find a speed where the slippage was lowered without lowering the speed of the robot.

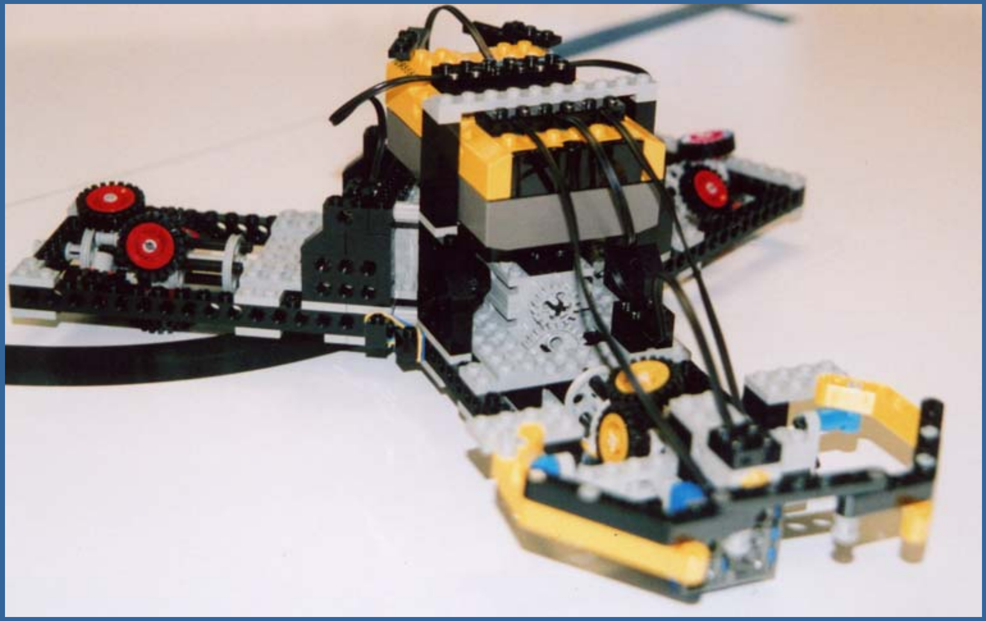


Design Summary

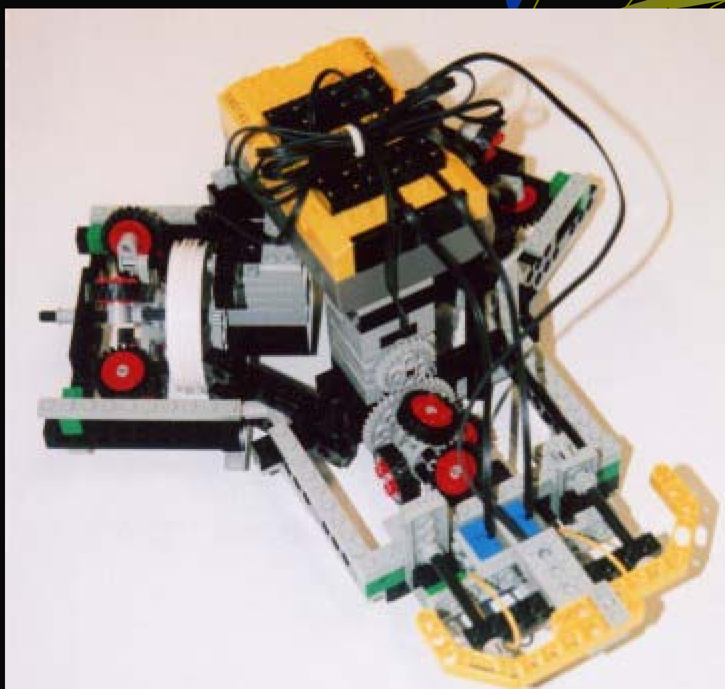
- Name due to its motion at high speeds and the claw like front bumper.
- 18-wheel design had been used before, known to work well and be reliable.
- Low gear ratio to provide the best control of the robot.
- Light sensors were placed as close to each other and the ground as possible (more accurate light values).







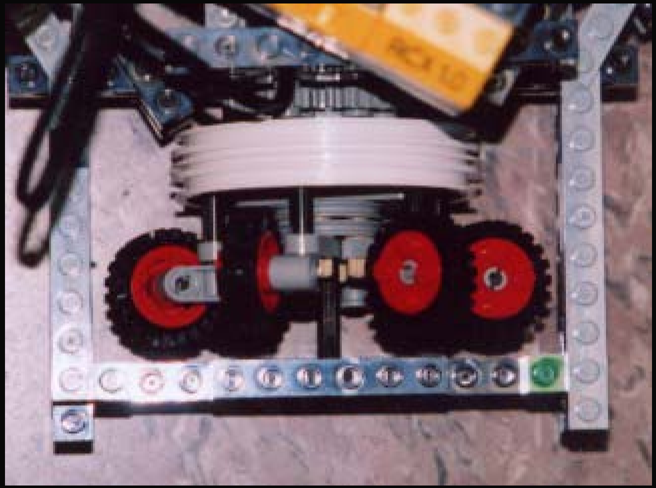
The Cap'n



Gabriel Young, TK Spencer,
Bryan Obermeier

The Goals

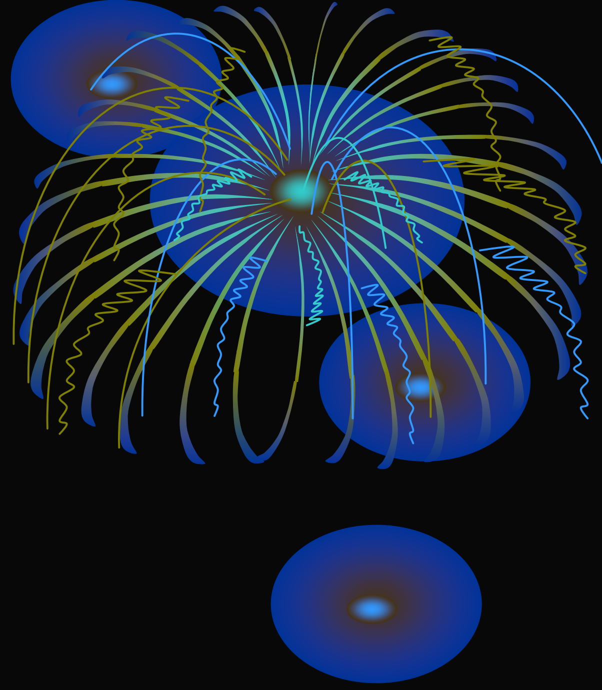
- Faster Speed with Wheels
- Faster Turning with a compact design
- To have an original design that worked
- To be able to crush the competition



The Problems

- Large wheels caused structural failure in the platform
- The front wheel over corrected caused by the tremendous gap between the small wheels
- Jitteriness caused loss of speed

Now Presenting

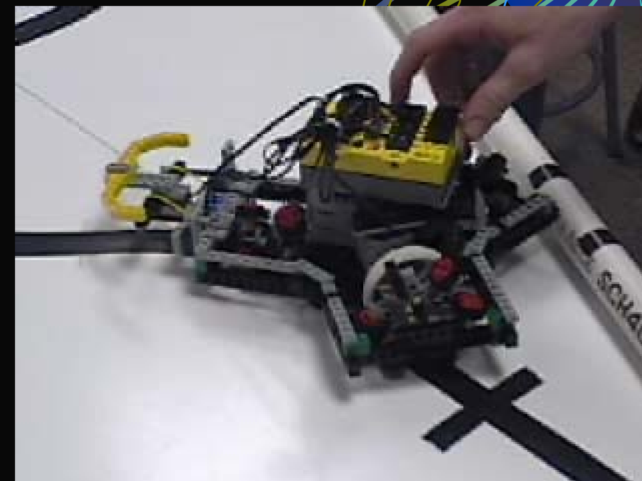


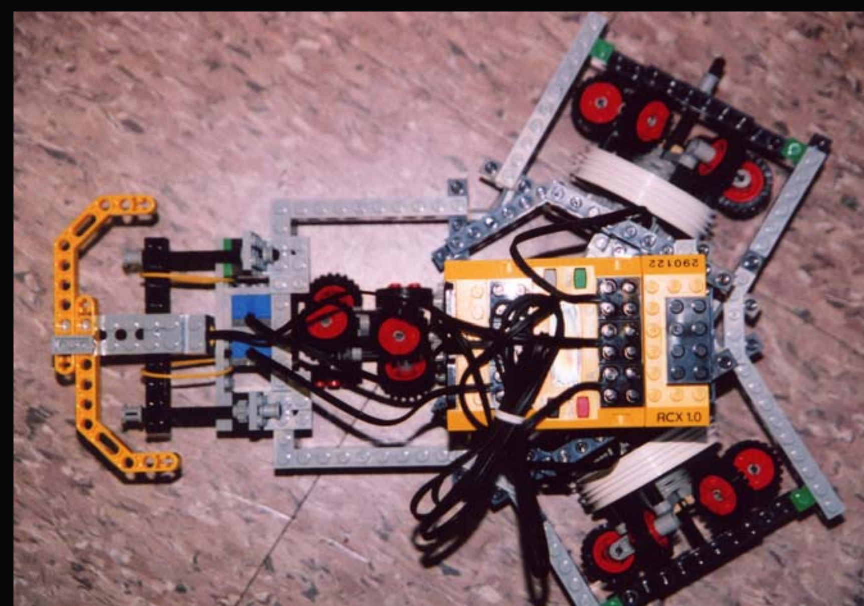
ARRR…

…THE CAP'N's LAST VOYAGE

The Solutions

- Smaller front wheel to adjust for the line jumpage
- Better gear ratios in the rear wheels, provided less speed but more torque for smoother ride.
- Simpler programming to follow line



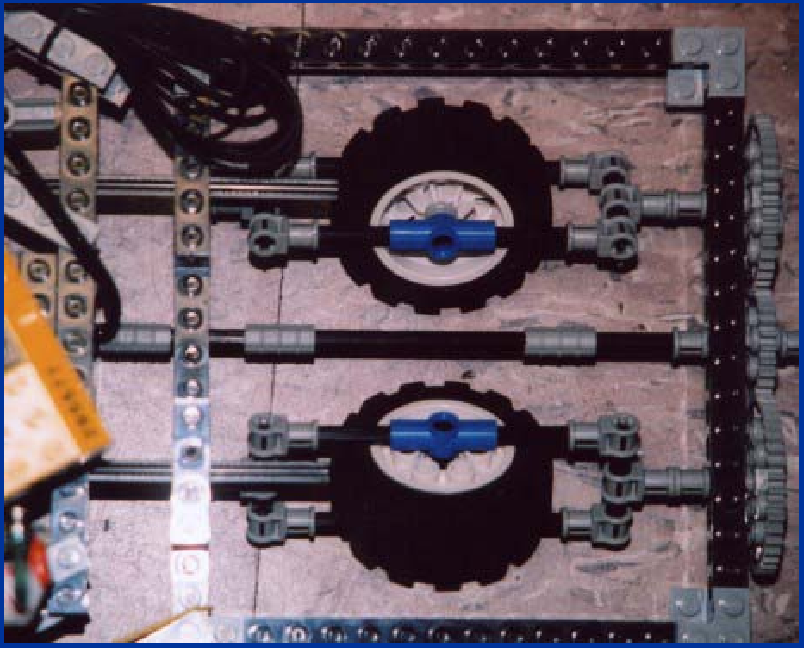


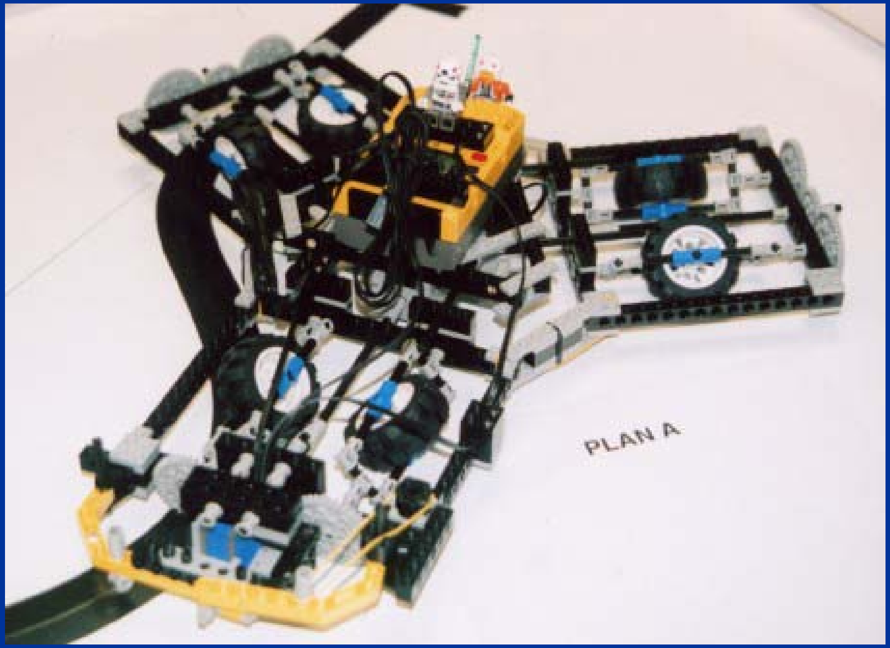
PLAN A

Michael Zakrzewski, Jesse Quadrel, and Kristen Meister

Design:
Bigger is Better

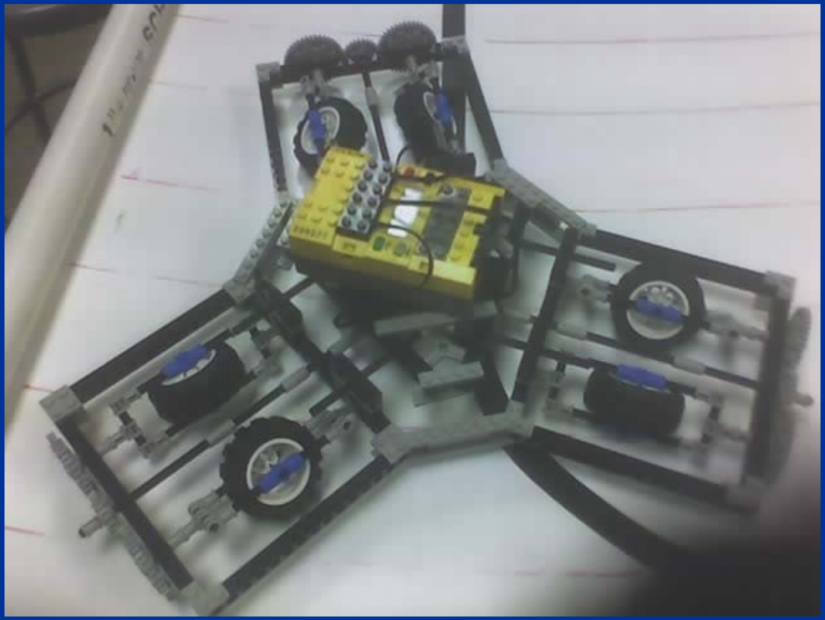
Bigger wheels, with proper gear ratios, would produce more torque and more speed

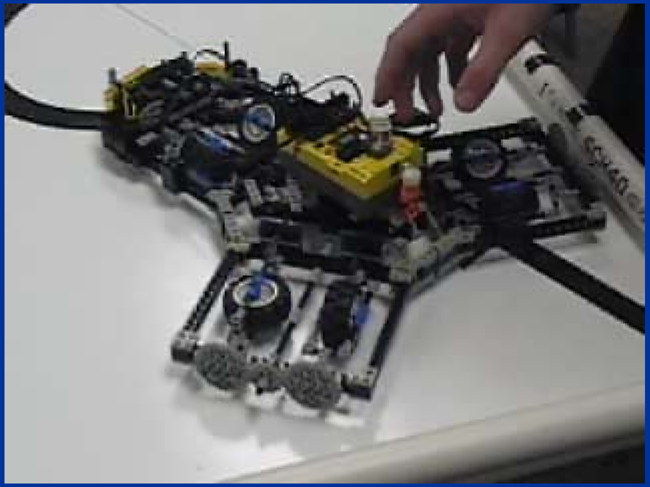


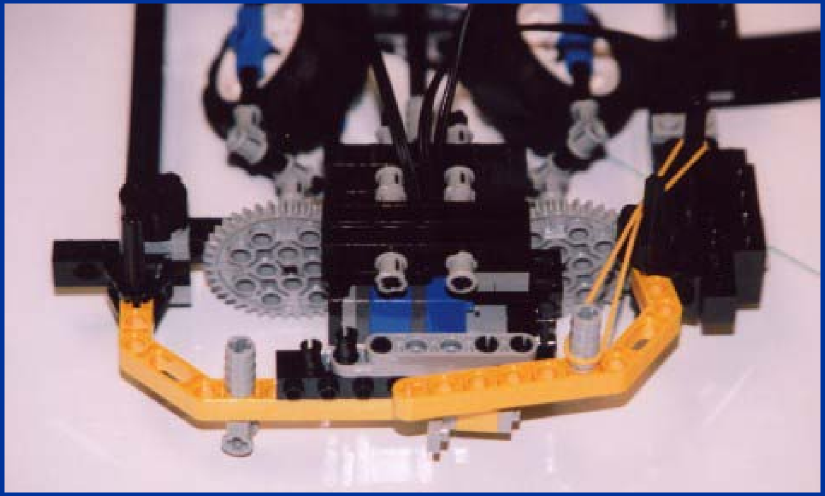


Plan A: Problems and Solutions

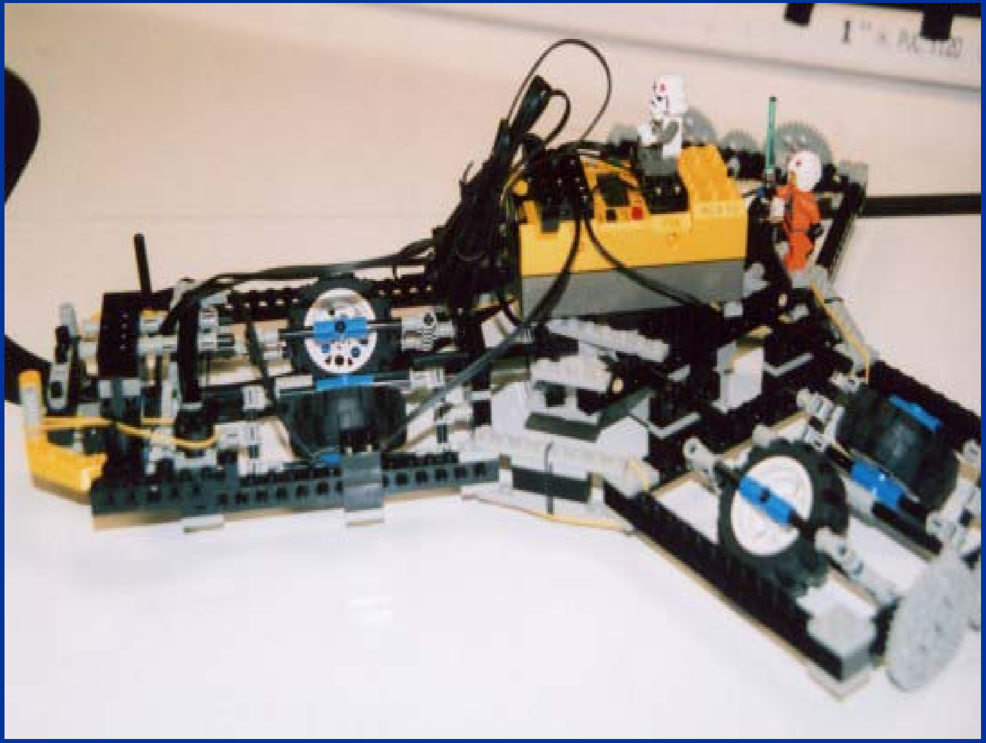
PROBLEM	SOLUTION
Weak Frame (unable to support RCX)	More Legos and rubber bands for more support in the middle as well as at the wheel bases
Pieces either not holding together or falling off	Again, added Legos for support and strength
Lack of Maneuverability (due to size)	Improved programming (adjusted the speed of the wheels when not on the track)
Bumper System	Trial and error until it worked





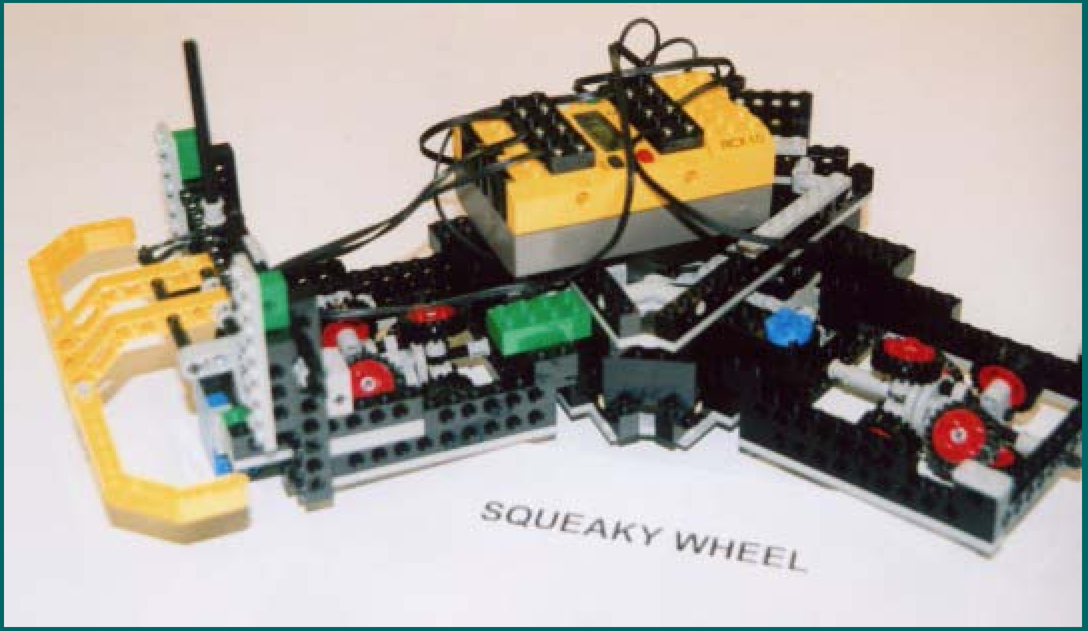


Results: Finished the course in 32 seconds, the fastest in the class, but was inconsistent and did not finish the course cleanly on the following two attempts.



The Squeaky Wheel

Seung Lee
Rob Thodal
Brian Umile



Problems   Final Design

- Wheel Selection
- 4 Wheel Platform Design
- Programming: Loops and Optimization
- Bumper with Vertical Pivot

- Smaller Wheel Choice
- 6 Wheel Platform
- Final Program
- Gear Ratios
- Bumper with Horizontal Pivot