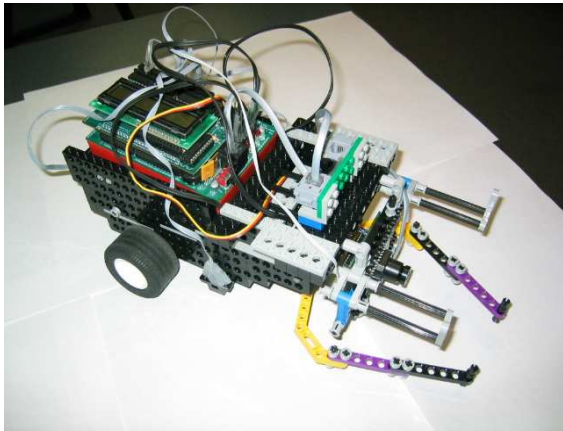
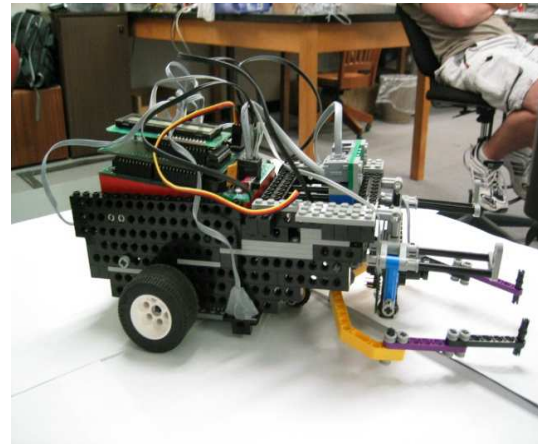

HARDWARE DESCRIPTION: GROUP #9 -- PROJECT #3

30 April 2003

General Description: Group #9 constructed a robot that is 30cm including bumper, and 13cm wide at its widest. At its tallest point, the robot stands 9cm. The overall design is two wheels in the rear, each wheel with its own axle and its own motor. A castor wheel in the front is mounted on a servo and allows for powered steering. One encoder on either axle regulates the motor speed and keeps each motor moving at approximately the same speed. IR sensors are attached on both side of the robot. The handy board sits in a cradle over the rear wheels. The pictures below give an overview of the general description of the robot.



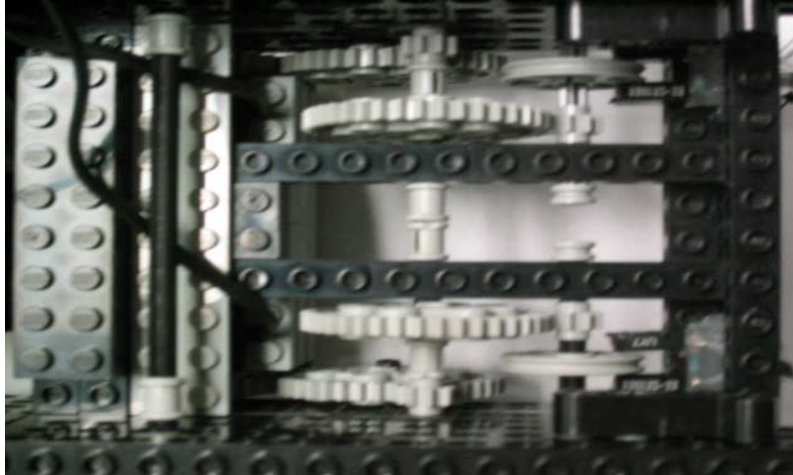
Picture #1 Three-quarter view



Picture #2 side View

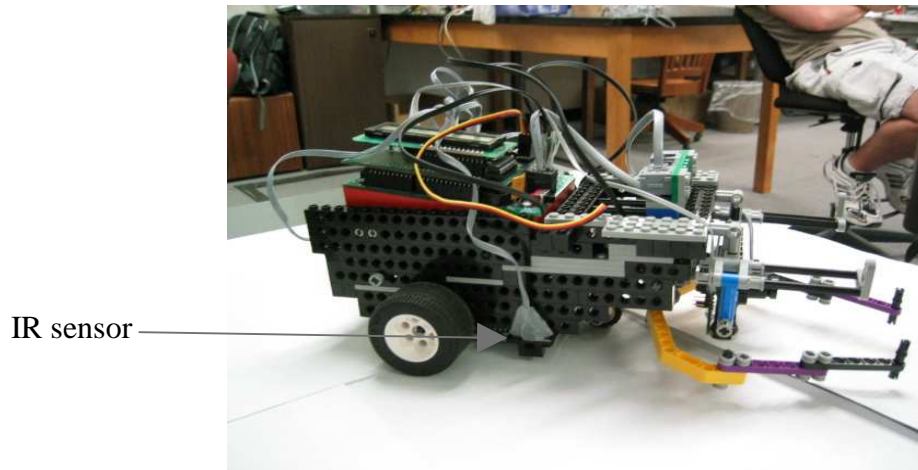
Gear Assembly: As mentioned above, each wheel has its own motor. Each motor has two gears connecting the motor to its wheel. The gears are arranged horizontally, with the second smallest of kit's gears attached directly to the motor, and the largest of the kit's gears attached to the axle. They provide all the forward motion.

Axle Assembly: The axle ended up being a rather complicated affair. Each wheel had its own axle, independent of the other wheel. The wheels used were 3cm wide and carried a 5cm diameter. The smallest gear from the Lego kit was connected to the large gear on the axle and the smallest gear is connected to another largest gear connected to another smallest gear to which the encoder wheel is connected (See Picture #3.)



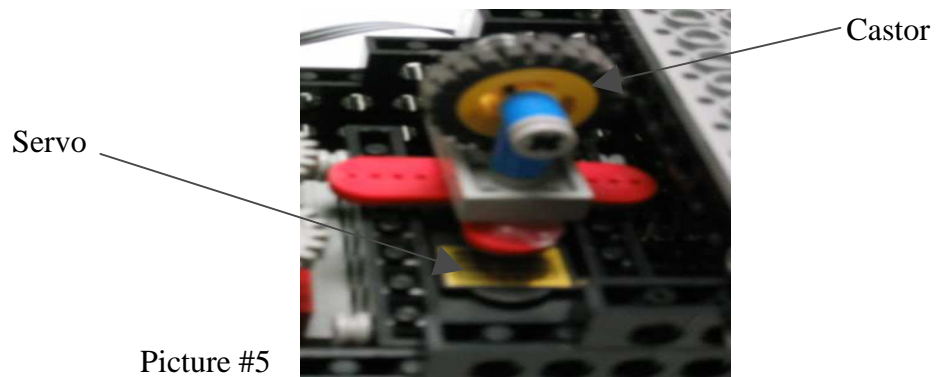
Picture #3

Light Sensor Support Arm: IR sensors are directly attached on both sides of the robot in front of the wheels (See Picture #4)



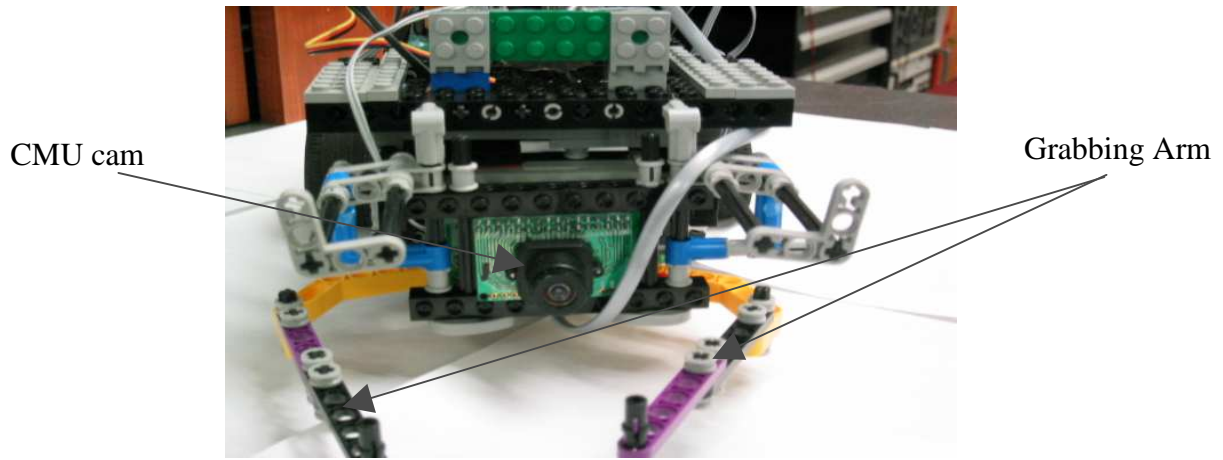
Picture #4

Castor Wheel Assembly: The castor wheel is in the front of the robot and mounted on a servo for steering (See Picture #5.)



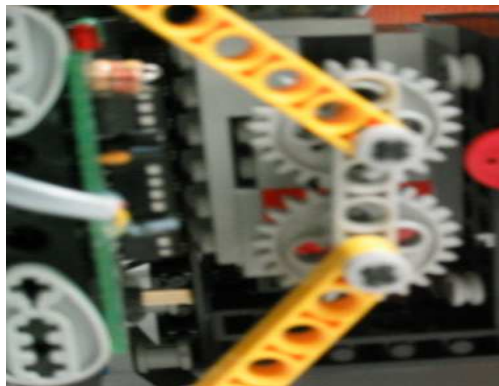
Picture #5

CMU cam: CMU cam is mounted in front of the robot without view angle. It is not connected to servo or motor. So to change the viewing area the robot has to rotate (See Picture #6.)



Picture #6

Grabbing Arm: A grabbing arm is attached in front of the robot to hold the object while the robot is moving to the destination.(See Picture #6.) A small Lego motor in the kit, small red motor, moves arm open and close. The left arm and the right arm are connected by two gear (See Picture #7.)



Picture #7