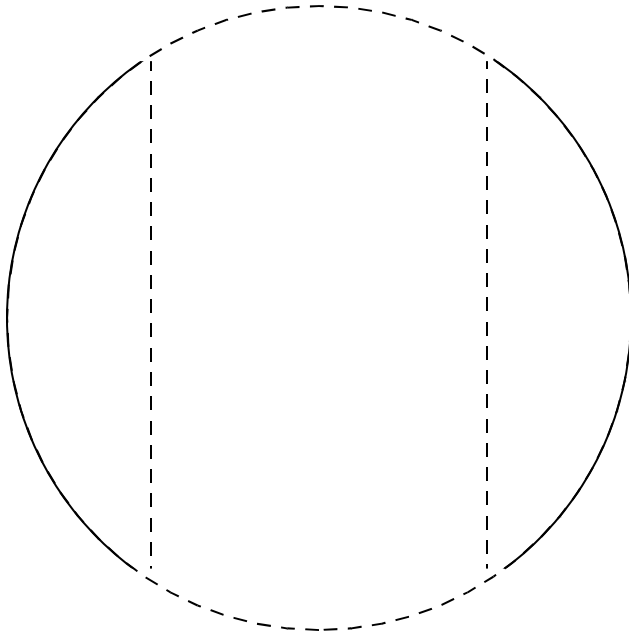
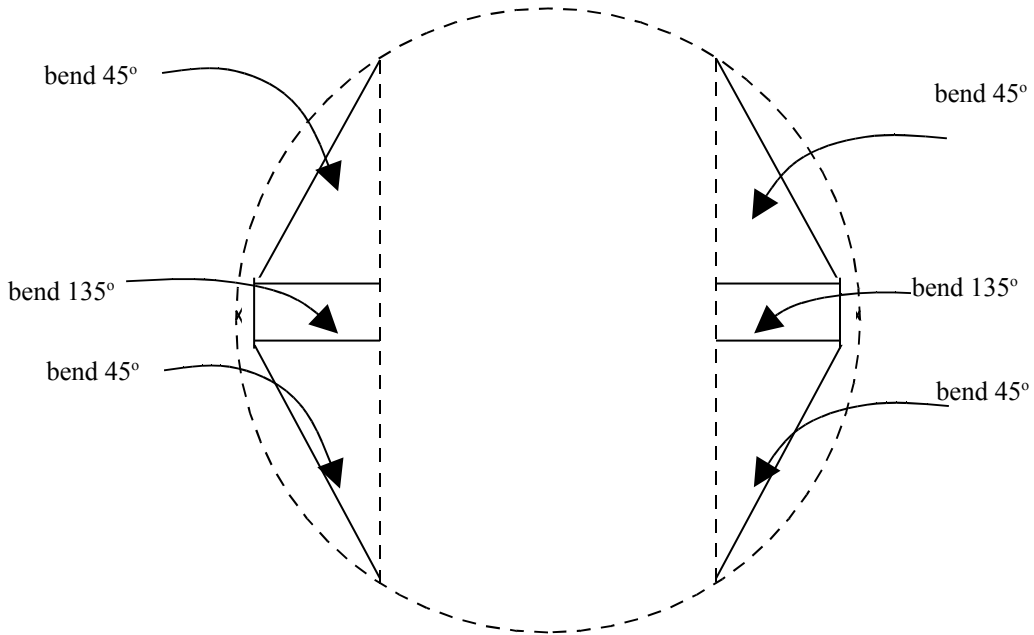


CHARLI, The Tuna-Can Robot

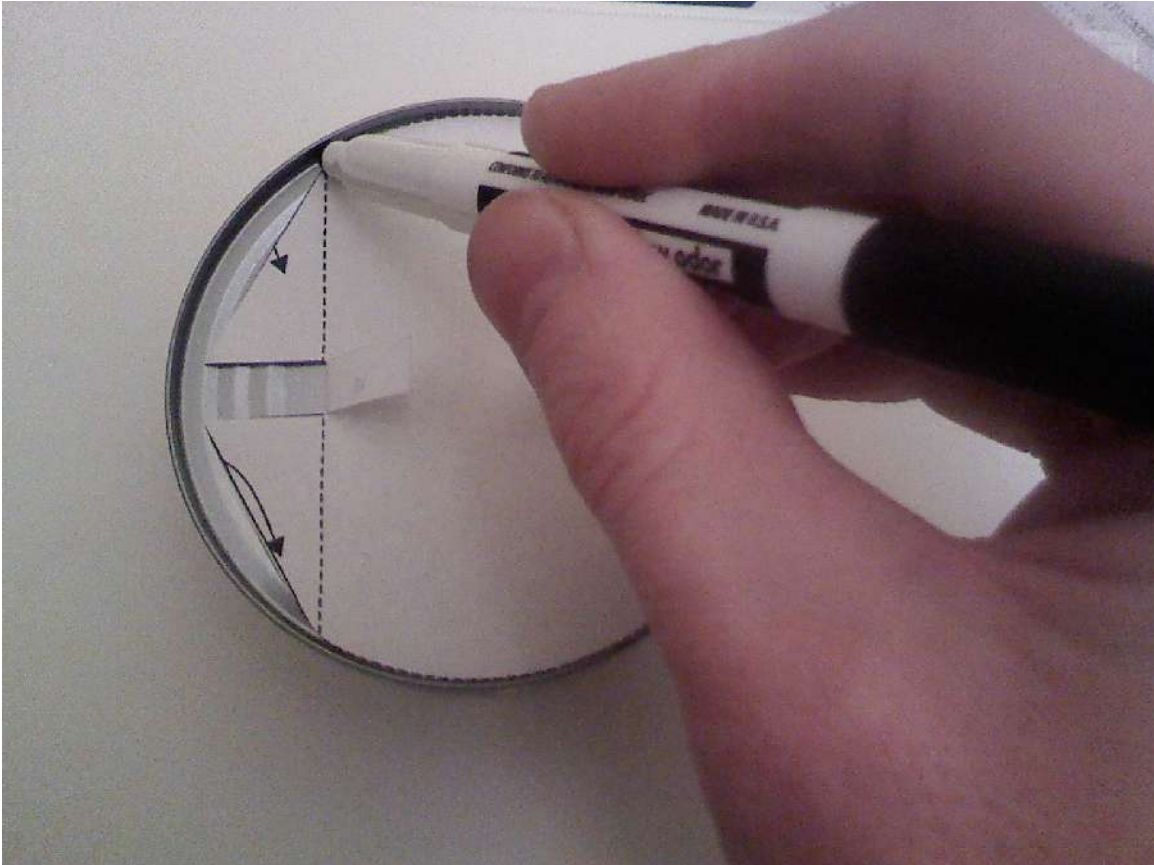
Template A



Template B



1. Mark the tuna-can top using template B (to make incision as shown by solid line on template A).



2. Use a regular can opener to start incision (assuming a right-handed person) on first side. The incision should stop after about 110°. **Do not remove** the lid from the can by completing the cut at this step.



3. This shows the stopping point of the regular can opener for first incision.



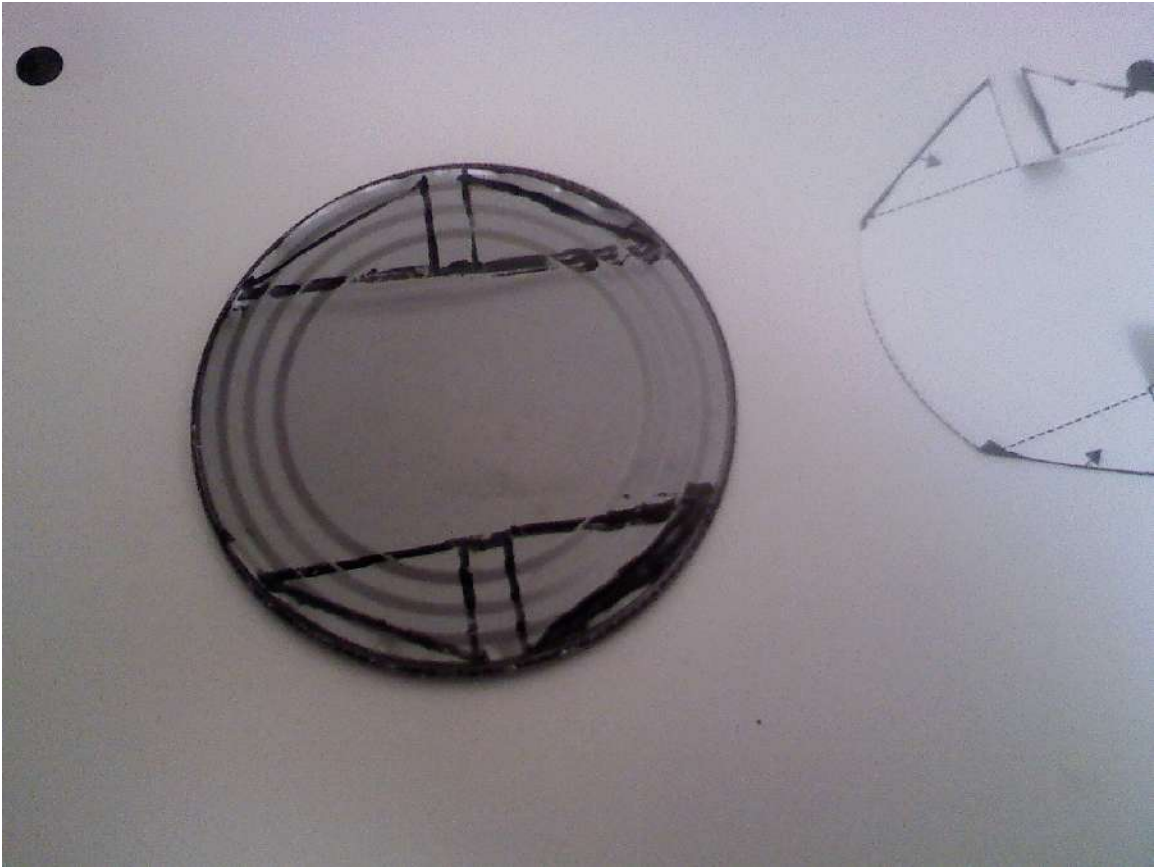
4. Make a similar approximately 110° incision using the regular can opener on other side.



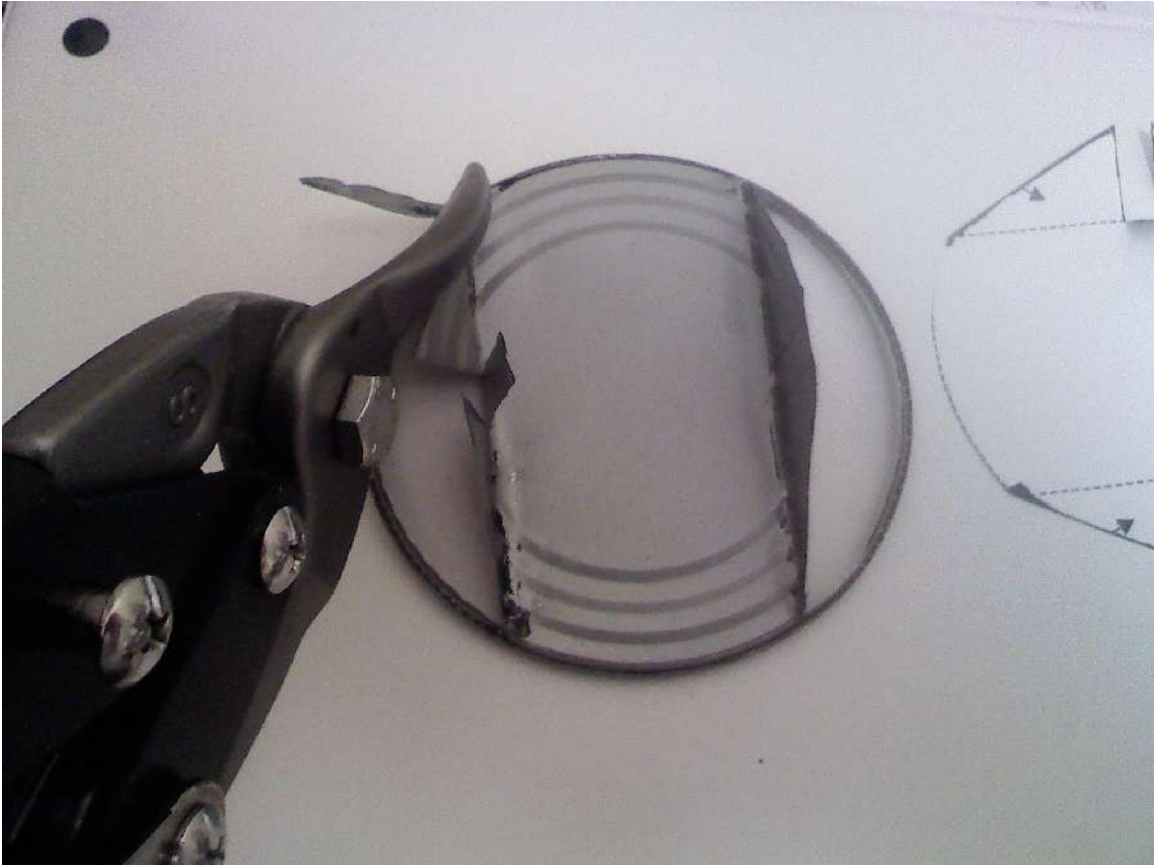
5. Using the “as-seen-on-TV” side-opening can opener, extricate the lid from can. After this, the top of the can will serve as the bottom of the robot.



6. Use Template B (shown to the side) to mark similar pattern on top of robot base (i.e. bottom of tuna-can lid).



7. Being careful with the sharp edges, bend up the two sides more than the amount shown on Template B to create a crease along the line drawn on the base. Using tin snips, make the two cuts on each side for the motor mounts. Then use the tin-snips, as shown, to remove the excess metal from the four arcs, being careful not to damage the rim of the can.



8. Bend each portion approximately to the angles indicated on Template B.



9. Use pliers to smooth the sharp edges on the interior of the lid where the regular can opener cut the two 110° incisions.



10. Using masking tape, mount the motors. Each motor has a $\frac{3}{8}$ " grommet to act as a tire. It may be easier to secure the motor by starting with a piece of tape about $1\frac{3}{4}$ " long and $\frac{3}{4}$ " wide from underneath the 135° motor mount, and then use additional masking tape to secure the motor to the 45° flanges. The exact angles may need to be adjusted so that the mass of the robot rests only on the grommets and the robot acts like a see-saw.



11. Here the FAN 8082 motor-control chips have been wired up using wire-wrap wire that acts a tether to an external computer (not shown). This is a convenient setup for debugging, but the force of the tether (acting like a spring) can be larger than what the motors are able to overcome.

