

E90 Proposal

Dave Gentry and Charlie Sussman

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We would like to design and build a machine that would be able to sort resistors leftover in the lab. The labs in Hicks are always cluttered with resistors, most of which end up in the garbage at the end of the year. Our sorter would enable the department to keep the lab clean and minimize the amount of money spent on replacing the resistors.

We have several different ideas for how to design the robot. One thing we might try is using a color recognition code which would enable the robot to read the value of the resistance much in the same way as we would do it ourselves. Another possibility is to have the robot have a variable voltage source so that we could use Ohm's law to measure the value of the resistance. We would use some sort of digital logic technique that sort each resistor one at a time. Once a resistor has been sorted, we would have the robot put it in a container for its respective resistance. We have not yet determined how exactly the robot or machine will move the resistors (perhaps some sort of mechanical claw will move over the appropriate box and drop it in), but we will attempt to make it as fast and efficient as possible.

Our thought is that this project will provide us with an opportunity to incorporate much of our engineering knowledge from programming and assembling circuits to actually designing and building something from scratch. We will be converting between analog and digital voltages to determine the value of the resistor, and then, perhaps using a program, outputting voltages to the robot.

The materials we will need are a lot of resistors, an ammeter, motors, supplies to make the arm itself, and perhaps a chip to take in inputs and give out outputs.