Distance-Sensing Doug

Final Project for Circuiteering Club
December 2009, Olin Year 1

In the Circuiteering club, I learned about microcontrollers, sensors, and basic engineering tools used to build an intelligent creature. I spent 1 month before the bi-annual Expo working on our very first robot.

Aim: a smart creature that can avoid obstacles and move away from them.

Solution: Using an infrared distance sensor mounted to the front of our robot, Doug, and a a **PIC microcontroller programmed in C-language** to sense distances of a few centimeters away. When this distance came between Doug and any obstacle, Dough was commanded to stop, 'turn right by 90 ' and accelerate away from the obstacle.

Design: An assembled mechanical 'machine'.
The distance sensor was mounted to the head of Doug and connected to an input of the PIC. The microcontroller made use of Pulse Width
Modulation to control the DC motors in the wheels of Doug via the use of **H-bridges** in between. The PWM supplied a signal to the H-Bridge-and-motor circuit (via a D/A convertor) so that speed and motor direction could be controlled.