

### **Slide 1**

Welcome to my presentation on a different breed of robots.

### **Slide 2**

The first robots of most people do simple things like, follow a line, navigate outdoors, work their way through a maze, or detect burning candles and snuff them out. These are fine for a first or even a second robot. But after a while, it gets a little tiring.

### **Slide 3**

So, after you've built a few of these responsible robots, its time to move on to something a bit more irresponsible. How about adding a high power laser to your robot? What about an AirSoft gun or an electromagnetic coil gun? What if you were to add a razor to your robot? Don't these items sound more interesting than a line follower circuit?

### **Slide 4**

The LaserBot has a 200 mW diode laser mounted to its nose. The laser was pulled from an LG DVD burner and mounted inside a diode laser module. The laser is hot enough to pop a black colored balloon. It's microcontroller is a BASIC Stamp OEM and it operates the robot's color camera and h-bridges. The camera is a Seattle Robotics CMUCam 1 and is used to differentiate between red and black balloons. When a black balloon is detected, LaserBot will center its laser on the balloon and fire. If the red region in the camera shrinks significantly, then the BS-2 knows if has popped the balloon. The h-bridge to drive the two servo motors is the Toshiba TA8080K motor driver.

### **Slide 5**

GunBot is controlled with a PICAXE-18X. This cheap microcontroller drives the robot with Toshiba TA8080K motor drivers. Using an IR beacon detector, the robot drives around looking for an IR beacon. Once identified, the robot turns towards the target and powers up its laser pointer. If the laser points at the correct target, then a simple command from a nearby human is enough to initiate the firing of an AirSoft machine gun.

### **Slide 6**

This robot has not been built yet, but I plan for it to operate an electromagnetic coil gun that accelerates steel arrow tips at a target. This robot will be stationary and monitor a perimeter with sonar. Once an object violates the perimeter, the robot will spin its turret towards the intrusion and fire the electromagnetic coil gun. The intended microcontroller for this robot is the PICAXE 14X. Since it's stationary, no h-bridges are required.

### **Slide 7**

This last robot is in the early planning stages. After watching the movie Sweeney Todd, I plan to model a robot after the main character. The SweeneyBot uses a BASIC Stamp 1IC and passive infrared detector to locate a target. When identified, the robot goes into action, swinging its razor back and forth as it drives towards the intrusion.

**Slide 8**

One thing that makes robots like these affordable is that I can make my own high quality printed circuit boards. A 4" by 6" single sided board costs around \$7.00 to make. That's cheap enough that I can afford my mistakes. You too can make your own PCBs. Read my January 2001 article in Circuit Cellar Inc for the details.