

**Title:** Car Speed Trap

**Problem**

Cars often speed through my neighborhood, which poses a hazard to myself and others when walking and crossing the street. The neighborhood also has many small children that play outside and could run into the road. The posted speed limit is 25 mph, but I've often observed cars driving at 40+ mph. The police do not have the resources to continually patrol the area. I'd like to be able to capture photos of cars that speed through the neighborhood so that I can demonstrate to the city that speed bumps are needed.

**Solution**

I'm going to use a Doppler radar system to measure the speed of cars on the street. If the car is speeding by 10 mph or greater (i.e. travelling 35+ mph) I will capture a photo of the car. This system will only need to be deployed for a couple of days at most, so I can build it into a cardboard box or Rubbermaid tub with a small USB battery pack that I can change if needed. I'll use the HB100 radar module, the Arduino and display in my SparkFun kit, my digital camera, and some analog components. I will build the recommended circuit for the radar from the datasheet and hook it to the Arduino. The Arduino will determine the Doppler frequency by counting pulses over a one-second period. If the car's speed exceeds the set speed, I'll add one to a total of speeding cars observed and use an IR led to trigger my digital camera. If the camera trigger is too expensive, I will just report the number of speeding cars per day to my city government.

**Resources**

There are numerous examples of using this radar module online. I'll need the resources to solder components. I may also need to use some of the hand-tools in the lab to cut the appropriate holes into the enclosure for my radar. No other machining or electronics resources will be necessary.

**Budget**

Quantity	Item	Cost
1	HB100 Radar	\$7.60
1	Arudino/Display	\$0.00 (already own)
1	Datasheet Components	\$15.00
1	Plexiglass window	\$5.00
1	Camera remote	\$10.00
1	Digital Camera	\$0.00 (already own)
1	Rubbermaid Tub	\$10.00
1	USB Battery Pack	\$10.00
	Total	\$57.60