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ECE 411 Projects

Project 1

Project Name: Passive Speed Detector

Project Description

- Uses relative change in intensity of headlight glare over a brief period of time to determine speed of oncoming vehicle.
- Device is intended to be mounted on a car, but could also be incorporated into a "gun."
- Outputs target speed on an LCD screen.
- Could use a second input other than photo sensor inputting speedometer reading to allow microcontroller to subtract from relative speed so that output gives just target speed.
- The sensor could be remote, or it could be built into one package.

Hardware

- Microcontroller
- A/D Converter for Photo Sensor (Unless a digital sensor is chosen—boring!)
- Power Supply
- LCD Display

Software

- Software driven function control (i.e., on/off, daytime setting, etc.) would be cool, instead of something boring like switches.
- Data processing—fairly simple math
- Output functions

Wow Factor: I think the wow factor with this one is just that it's a useful, unique (to my knowledge), and very applicable idea.

Project 2

Project Name: Waterproof Fall Distance Detector

Project Description

- Waterproof wearable (wristband or clip onto bathing suit) uses accelerometers and possibly moisture sensor to measure height of cliff jumps. Great for people who like to jump into rivers and no one ever believes how high they jumped from—or the reverse, the people who say they jumped off a 40' bridge that we all know was more like 20'.
- Could be simple (uses accelerometers to start and stop the clock, then uses preprogrammed "frictionless" acceleration figure to compute distance) or more complex (uses accelerometer data to interpret distance from acceleration data points). Could

potentially use moisture sensor to detect when user is in water—limiting false stop trips from user movement in air.
- Outputs data onto an LCD. Could have a cool feature like storing highest jump.
- Could be adapted for any jump, including on land, if moisture sensor route is not taken. That would be cool.

Hardware
- Accelerometer
- Microcontroller
- LCD Display
- Waterproof Casing
- Battery—possibly wirelessly rechargeable…that would be cool.

Software
- Data processing—simple to complex functions, depending on design
- Output functions
- Ability to store limited data and provide comparisons with new jumps
- Ability to clear saved data
- It could also track more complicated data like force of impact, top speed, etc.

Wow Factor: I think there is significant wow factor with this being waterproof—plus it's a lot of fun.