**Overview**

Project Title: **Flashing Jacket**  
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We want to build a wearable LEDs system that might be useful for bike riders. The main goal is to create signs on the biker’s shirt to notify vehicles of its direction to protect the bikers’ night safety. When not biking, the LEDs can respond to sounds and music in the user’s vicinity.

**Project Approach**

The project will model the motion status of a bike as a state machine governed by a combination of sensor inputs(including accelerometers, buttons), focusing on the timing of turning directions and the control of a bunch of LED actuators.

**Objectives**

The primary goal is to accurately detect the direction changes of the bike and to output a corresponding sign for a proper time through the LEDs to notify the passing vehicles. Another goal is to make the LEDs respond to sounds and music in the user’s vicinity according to its tune and volume.

**Major Deliverables**

* A simulation of the LEDs for each signals and for music
* A demonstration of the control of the LEDs using a microcontroller
* A user interface to generate the direction signal
* An algorithm to detect bike movements: turn, brake.
* An algorithm to control LEDs with music

**Risk and Feasibility**

* Spend too much time on the mechanical part (especially sewing)
* Choose the wrong hardware components (this is a critical task)

**Critical Path**

Choose the hardware; Buy the hardware; Learn how to use and connect the hardware parts; Implement algorithms; Build final device.