

LED Illuminated Cloth for bicyclists

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Keywords: Cyclist, Illuminate, Safety

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Background:

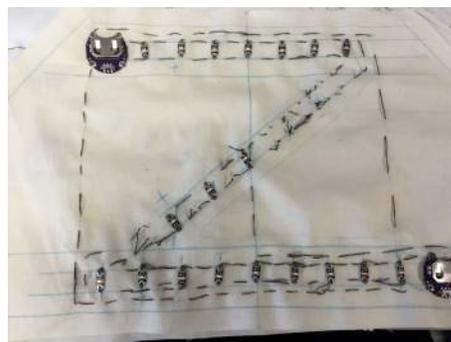
Bicycling is always one of the most popular, if not the most popular, exercises among people. As it helps you to lose your weight and have your strength trained. Unlike juggling, bicycling would not damage your knees. However, what comes with the boom of bicycling is the increase of the death rate of the bicyclists. According to *Bicyclists and Other Cyclists (2012)* report, “the 726 pedalcyclist deaths in 2012 accounted for 2 percent of all traffic fatalities during the year” (p.1). According to Michael (2-13), 1 lot of the accident happened in the evening as the biker is in some degree invisible from distance and it is too late when the driver is able to see the cyclists.

Previous:

Many designers have been thinking about saving the bicyclists lives by designing new clothes for them. One of the most popular options is to illuminate the cloth. By producing the cloth with fluorescent material, both the visibility and price of the cloth went skyrocket. According to Michael (2013), the material’s reflect effect is not visible as bicyclists thought. Therefore, I want to take another route that has been designed from the pedestrian, to add LEDs to the cloth.

Solution:

LEDs are added in three different locations: the chest, the back, and the sleeves. The amount of LEDs in the chest and back are higher than the one on the sleeves in order to make the cloth visible from distance. And the LEDs on the sleeves mark the width of the bicycle for the drivers to measure the distance when they get closer.





Design process

Weight and the color of the shirt are the two major considerations that I have. Thankfully LEDs do not require too much power to work, which makes the battery light-weighted.

After testing yellow, black, and white materials, I found out that white is the most suitable color as the contrast is significantly better than the other two colors. I didn't think about other colors for the fact that they do not look good at all.

Future usage

In one word, what I am proposing now is just a prototype indicating my idea of combining the LEDs and the clothes together to improve the safety of the bicyclists. Currently I have three different ideas, which requires more than designing skills. First of all, I want to have use the water-prove PVC material to wrap the illumination modules. Thus people can directly put the cloth in the wash machine without worrying about the potential damage of the cloth.

After that I am planning to make the part detachable and connect to the cloth by hook & loop tape. bicyclists should be able to decide whether they need a self-illuminate cloth or just a normal shirt for day time usage.

Last but not least, ultimately I want to totally remove the battery from my design, which would significantly reduce the weight of the shirt. However, to achieve this goal. I need to design the whole part from scratch: power would be generated by the movement of the wheels; the power is transported to the illuminate module through the special fabric in some part of the cloth; the cloth would not feel different from the cloth available from any of the professional sport store.

References

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