

#Lit Brolly

Nōn omne quod nitet aurum est.

Team Name: Lit Brolly

Team Members: Aaron Tan, Lily Yang, Hengcheng Yu

Team Number: 25

Proposal Description: LED *Blade Runner* inspired umbrella. We would line the inside of the umbrella with LEDs (along each inside spoke) that would light up according to how fast the umbrella is moving and the orientation of the umbrella. Software on the Omega2 will need to take input from the accelerometer, translate that to an intensity and colour, and output this to the LED light strip. Accelerometer input will be read from the GPIO pins, and the LED strip will be interfaced with via SPI according to the datasheet available on manufacturer's website, or an appropriate library if available and functional.

Stretch goals: Users should be able to switch between lighting profiles, such as different types of animation or colours. Control of different lighting profiles would be accomplished from a phone or via a web interface. This will have to be further investigated to determine feasibility within the time frame. In addition, smoothing of the dataset would likely be necessary to prevent abrupt changes to colour/intensity with sudden movements.

fig. 1.1: A picture is worth a thousand words—we would like our final project to look somewhat like this.



Equipment Requested:

Item	Use	Cost	Where to purchase	Expected Delivery Date	Interface with this hardware
Kuman / NeoPixel Individually Addressable LEDs (WS8212/SK6812)	To line the inside of the umbrella with pretty lights	\$23.99	Link	2 business days with Amazon Prime	Link Additional Link
Accelerometer (LIS331HH)	For detecting speed and direction	\$7.15	Link	1-3 business days (Fedex International Priority)	Link
Clear Umbrella	To shield from the sun or rain, and also to house all the components	\$10.23	Link	Shipping in 2 days with Amazon Prime.	Arms
Arduino Dock	To interact with the LEDs through the NeoPixel library in case SPI doesn't pan out	\$16 (Limited time price; valid until November 8th)	Link	Not specified on website	Link
Lithium Ion Polymer Battery - 3.7v 2500mAh	Power supply	\$14.95	Link	1-3 business days (Fedex International Priority)	
Onion Omega2	Control the components	\$0 - already acquired	-	-	Link
Total Cost:		\$72.32*			

* N.B. we are willing to cover any cost beyond what is approved by the ECE department.