



E-Trike

Kassandra Price, Adaugo Anyamele, Felicia Long, Breyonna
Pinkney, TiAuna Dodd, Mercy Daniel-Aguebor

Advisor: Timothy Brown

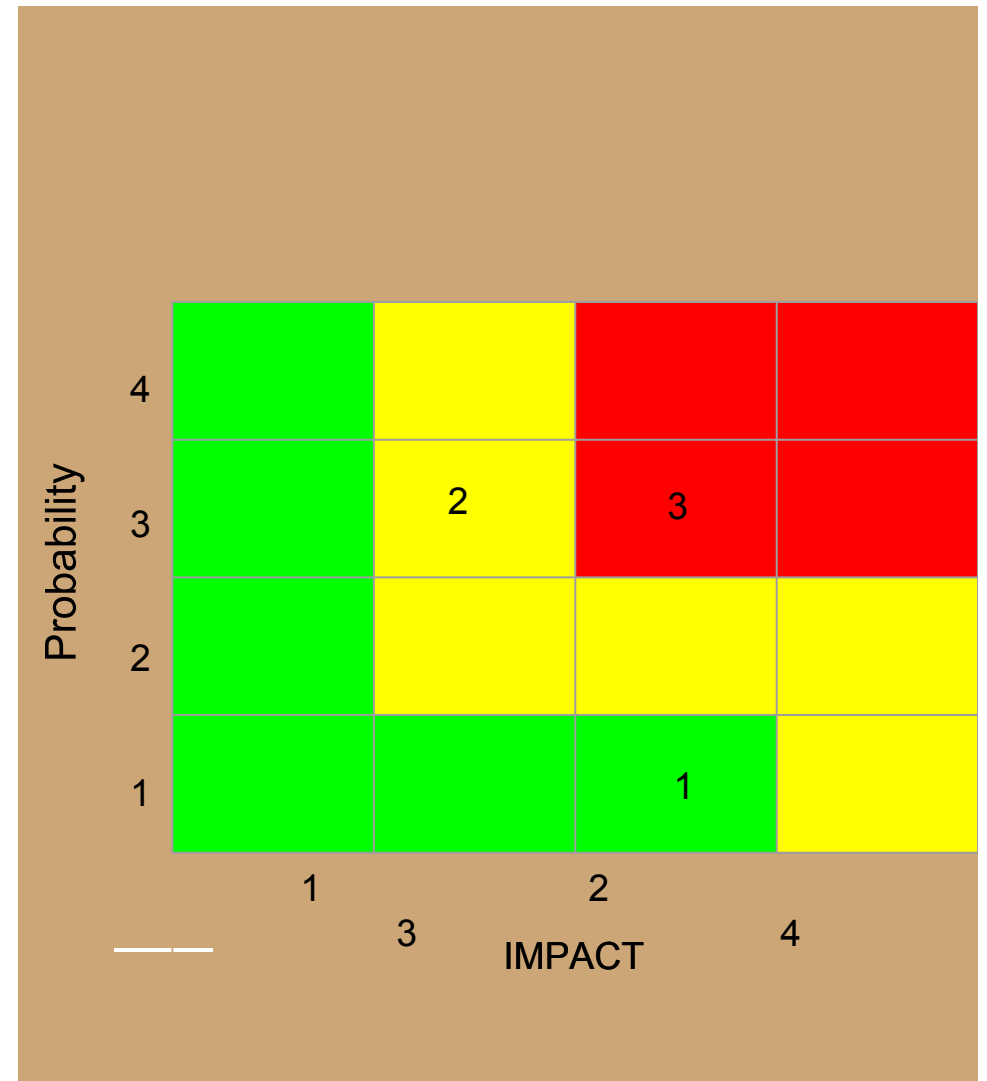


UPDATED EXPECTED TIMELINE

A	B	C	D	E	F	G
	3		Getting the funding for hardware	Mercy	software outline	DONE
	4		Getting the hardware ordered and having a plan for the software	Mercy and Tiauna		DONE
Feb	1		Designing the PCB Board - learning about it	Breyonna	Designing the PCB Board and having drafts of the whole system	DONE
	2		Designing the PCB Board - having a draft prototype	Breyonna		DONE
	3		Coding the App - Building the draft interface	Tiauna		DONE
	4		Getting the individual hardware to work properly	Kassandra		DONE
Mar	1		Getting the bluetooth to work	Mercy, Felicia	Having a moving bike and something to present	DONE
	2		Connecting the peripherals on the arduino	Felicia & kasa		ONGOING
	3		Build the user interface to talk to the hardware	Tiauna		ONGOING
	4		Putting the parts together	Breyonna		
Apr	1		Fixing bugs & Troubleshooting	Adaugo	Having a moving	

RISK MANAGEMENT

Rank	Risk	Approach
1	Each module working (Gps, Lights)	W
2	Bluetooth connection to App	R
3	Bike Hardware (Battery, BMS, Motor, Motor controller, chains)	A



Progress

Highlights

- Visited the bike shop
- Vendors approved for parts
- Scope of the project changed to be more flexible
- Found a mentor
- Three peripheral modules working - GPS, Bluetooth, and Light Sensor

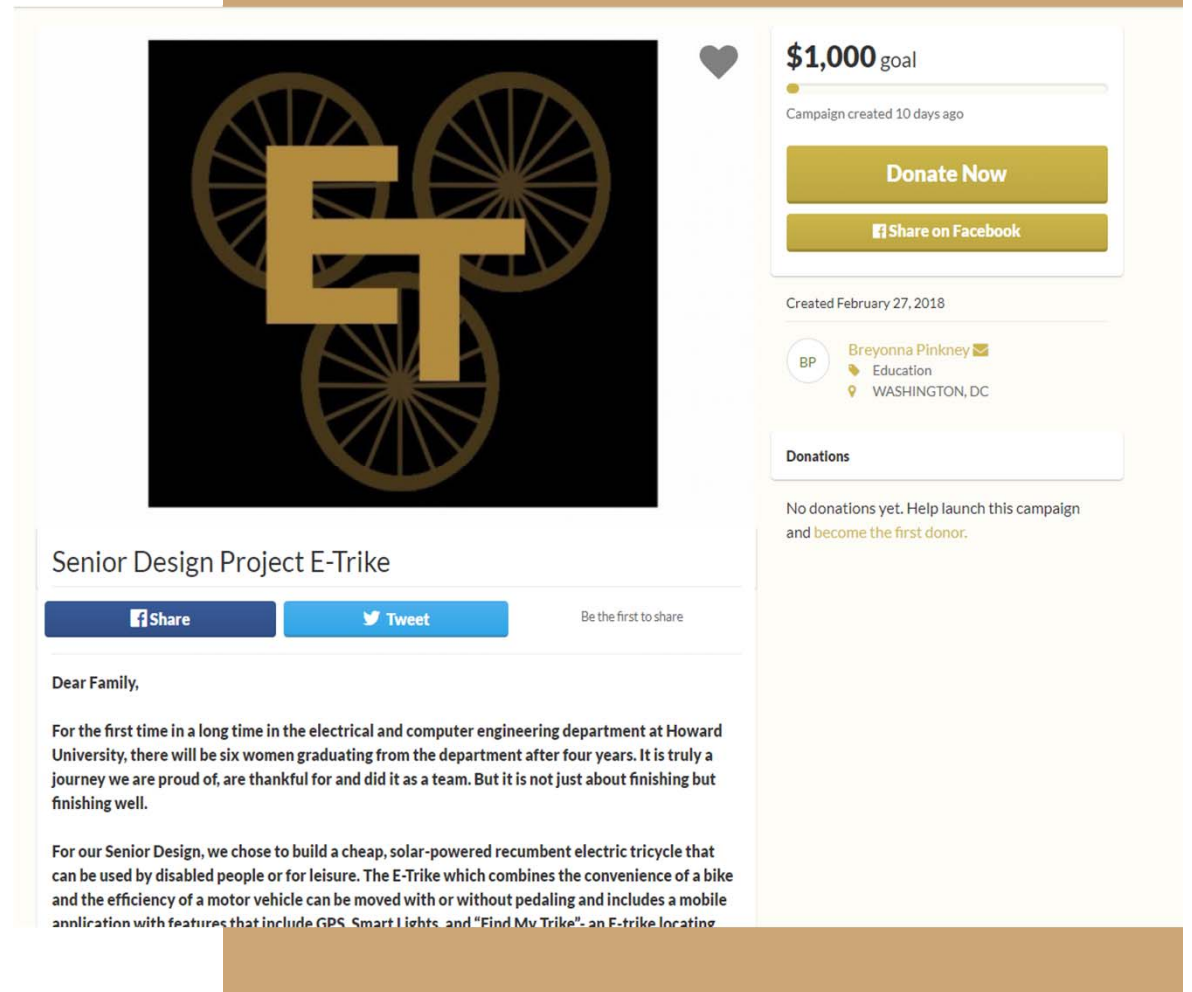
Lowlights

- Delivery time for bike parts
- No donations to Gofund me
- App Scope increased
- Additional parts needed to control the headlights
- Assembling bike parts

PLEASE DONATE!

<https://www.gofundme.com/etrike>

TO AVOID WORST-CASE SCENARIO



The image shows a screenshot of a GoFundMe campaign page. At the top left, there is a large black square with the letters 'ET' in a gold, stylized font, overlaid on three bicycle wheels. To the right of this image is a heart icon and a progress bar showing a \$1,000 goal. Below the progress bar, it says 'Campaign created 10 days ago'. There are two gold buttons: 'Donate Now' and 'Share on Facebook'. Below these buttons, it says 'Created February 27, 2018'. The creator's name is 'Breyonna Pinkney' with a verified email icon, and her location is 'WASHINGTON, DC'. Below this is a 'Donations' section with the text 'No donations yet. Help launch this campaign and become the first donor.' At the bottom of the page, there are social sharing buttons for Facebook and Twitter, and the text 'Be the first to share'. The main text of the campaign is as follows:

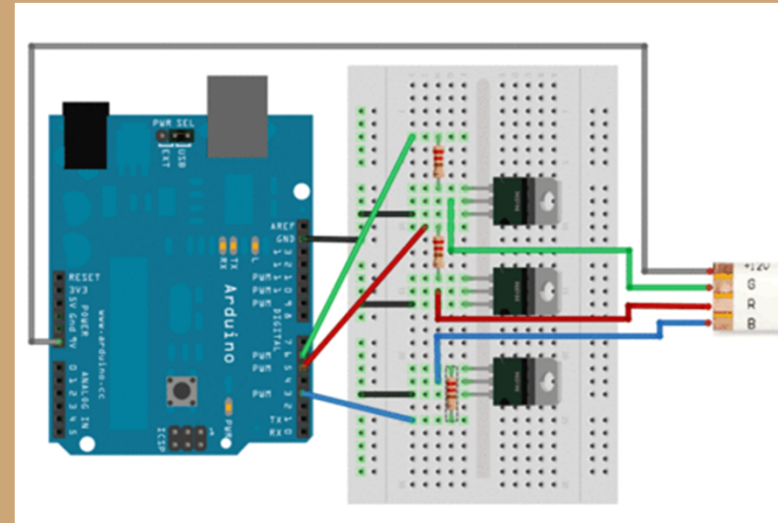
Dear Family,

For the first time in a long time in the electrical and computer engineering department at Howard University, there will be six women graduating from the department after four years. It is truly a journey we are proud of, are thankful for and did it as a team. But it is not just about finishing but finishing well.

For our Senior Design, we chose to build a cheap, solar-powered recumbent electric tricycle that can be used by disabled people or for leisure. The E-Trike which combines the convenience of a bike and the efficiency of a motor vehicle can be moved with or without pedaling and includes a mobile application with features that include GPS, Smart Lights, and "Find My Trike"- an E-trike locating

HEADLIGHTS

- Proposed to be controlled by the arduino to ensure sparing use to conserve battery
- Materials needed to ensure pins can support 12V
 - SUNKEE IRFZ44N Power Mosfet
 - Can take up to 16 Amps continuously



HEADLIGHTS IN ACTION

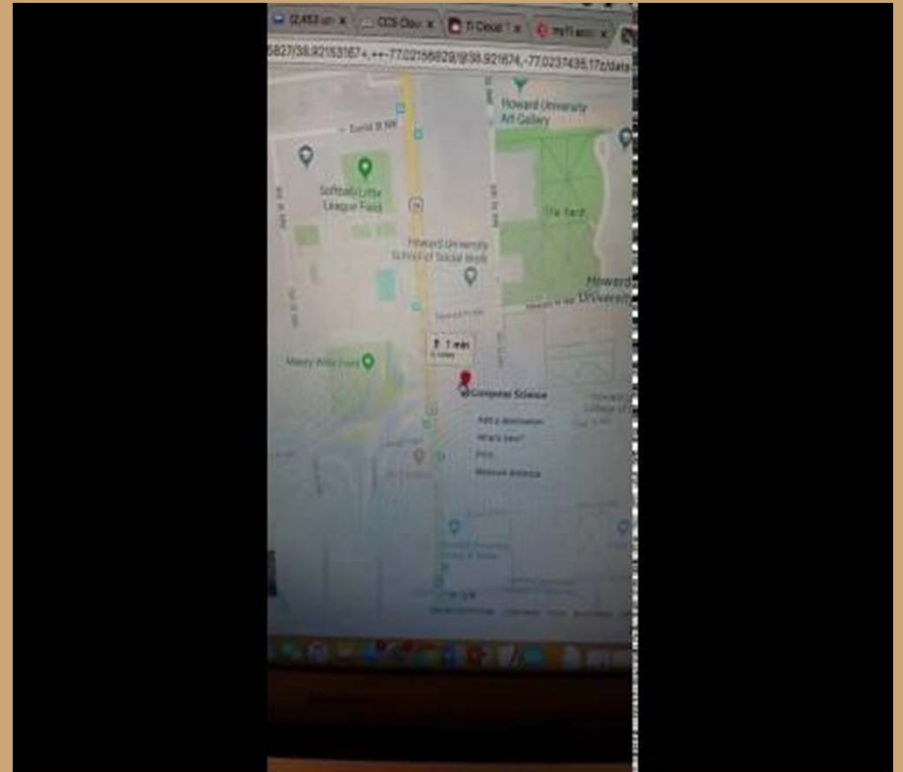
- Red - For brakes
- White - Left turn
- Yellow - Right turn



GPS Vid Demo

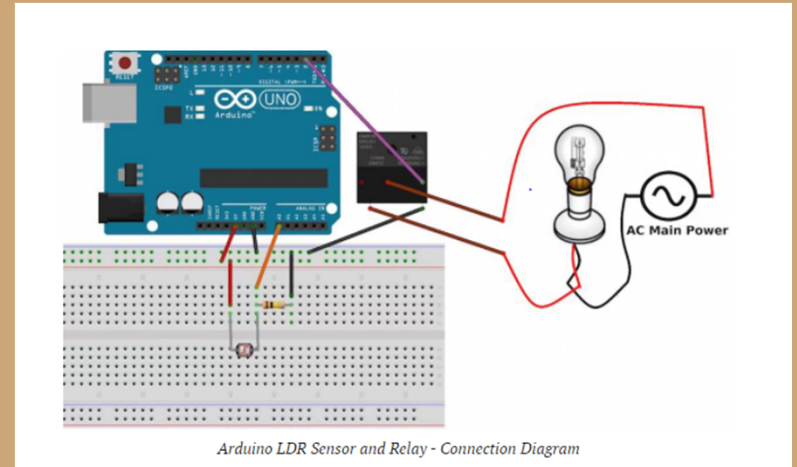
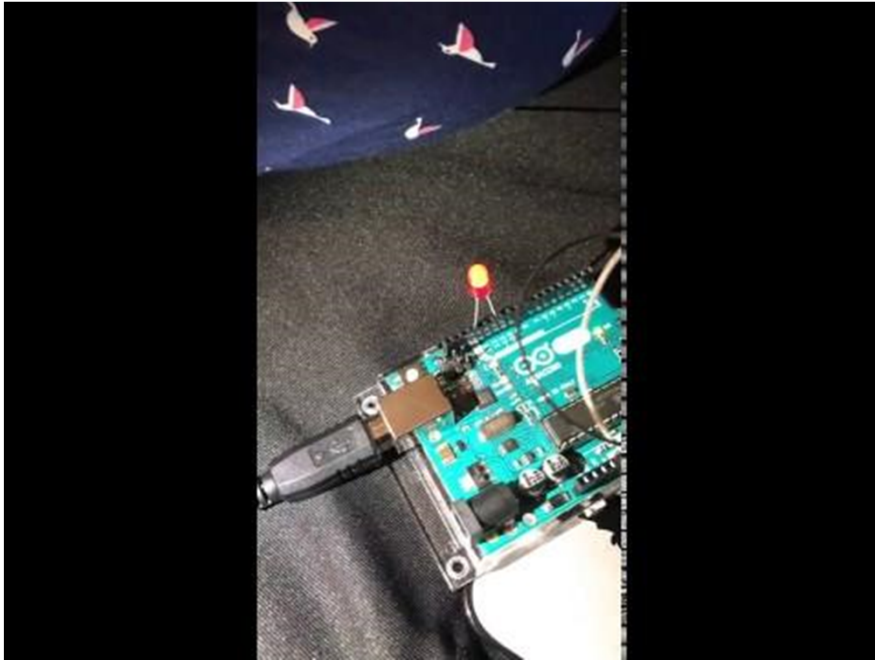
*MakerFocus GPS Module 51
Microcontroller Ublox GPS*

- **Has mobility (Attach to the trike without being attached to a computer)**
- **Pin Points Longitude and Latitude**
- **Assess Speed in mph**



Light Sensor

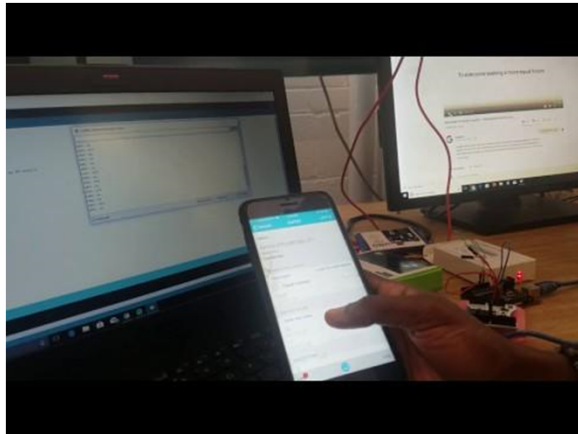
TEMT6000 Ambient Light Sensor



- Works!!
- LED responds to the relative brightness exposed to the light sensor
- Used to ensure bike safety and can be controlled via app

Bluetooth Hardware

- Updated the Arduino Hardware
- Updated the code



```
Arduino IDE: Etrike_bluetooth_trial | Arduino 1.8.5
File Edit Sketch Tools Help

Etrike_bluetooth_trial
/*
 * Bluetooth Basic: LED ON OFF - Avishkar
 * Coder - Mayyagh Girish
 * Website - https://bit.ly/Avishkar
 * Download the App : https://github.com/Mayyagh/Arduino-Bluetooth-Basic
 * This program lets you to control a LED on pin 13 of arduino using a bluetooth module
 */
char data = 0; //Variable for storing received data

void setup()
{
  Serial.begin(9600); //Sets the baud for serial data transmission
  pinMode(13, OUTPUT); //Sets digital pin 13 as output pin
}

void loop()
{
  if(Serial.available() > 0) // Send data only when you receive data:
  {
    data = Serial.read(); //Read the incoming data & store into data
    Serial.print(data); //Print Value inside data in Serial monitor
    Serial.print("\n");
    if(data == '1') // Checks whether value of data is equal to 1
      digitalWrite(13, HIGH); //IF value is 1 then LED turns ON
    else if(data == '0') // Checks whether value of data is equal to 0
      digitalWrite(13, LOW); //If value is 0 then LED turns OFF
  }
}

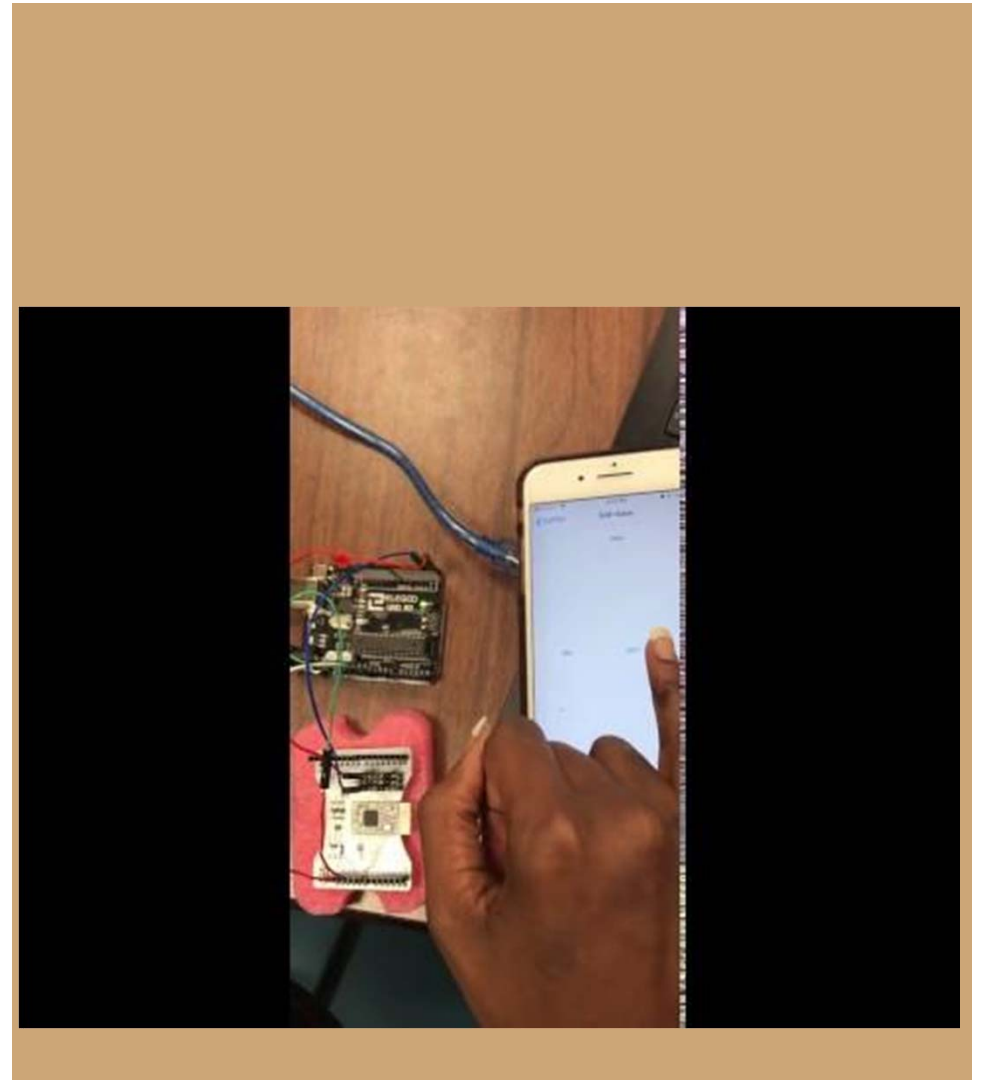
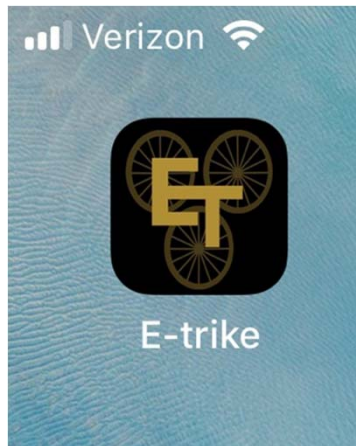
Done uploading
Sketch uses 1796 bytes (5% of program storage space. Maximum is 32256 bytes.
Global variables use 197 bytes (5% of dynamic memory, leaving 1861 bytes for local variables.

Arduino/Gemino Uno on COM9

fritzing
```

Bluetooth Development

Combining all working modules to bluetooth then connecting the bluetooth to the mobile app



NEXT STEPS

- **Visiting bike shop**
 - **Customizing App**
 - **Fundraising**
 - **Assemble bike**
-

QUESTIONS?

*Thank
you*

