LED Bike Vest

ECS1001 - Engineering Clinics

Arduino using Embedded C – Project

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VIT-AP UNIVERSITY

AMARAVATI

ANDHRA PRADESH, INDIA

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Team Members

1. NIRDESH SINGH 20BCE7062
2. VARIGONDA ANJANI GAYATHRI 20BCI7003
3. MANYA ARORA 20BCE7441
4. SAKETI BHAVANI 20BES7073
5. DEVARAPU KUSUMA 20BEC7074
6. ALAGAPPAN SP 20BCE7211

Problem Statement

Riding bicycles is dangerous at night. Bicyclists are especially at risk because, unlike motorcycles, vehicles, and trucks, bicycles lack indicators and headlights. The drivers in cars often don't see you at night— they are only looking for other cars. So, bicyclists develop a greater propensity for mishaps.

The solution is to make yourself as visible as possible when you're on a bike. Brightly colored vests, like those worn by road construction workers, can help you stand out.

To combat this issue, we are working on a wearable gadget called "LED Bike Vest", an open-source Arduino turn signal bike safety vest. The Bike Suit is a device designed to improve a cyclist's visibility, particularly at night. increasing a cyclist's purpose and communication with other drivers and pedestrians on the street.

Light Vest could have a real impact on safety, particularly for people riding at night.

Required Components

For our project, we need the following components: -

- 2 x Arduino Nano
- MPU6050 (Accelerometer)
- LED Strip (WS2812B)
- Jumper Wires
- 2 x Bluetooth HC-05
- Rechargeable Battery, 4.8 V
- 2 x Slider Switch
- Push Button
- Capacitors
- Breadboard

Approximate Budget Required

S.NO :	PRODUCT	QUANTITY	COST
1	2XArdunio Nano	1	₹ 1036.45
2	MPU6050 (Accelerometer)	1	₹ 189
3	LED Strip(WS2812B)	1	₹ 450
4	Jumper wires	One set	₹ 70
5	2xBluetooth HC-05	1	₹ 388

6	**Rechargeable Battery,9V**	**2**	**₹ 456**
7	**2xSlider Switch**	**1**	**₹ 99**
8	**Push Button**	**1**	**₹199**
9	**Capacitors**	**1**	**₹279**
10	**Breadboard**	**1**	**₹ 84**
	Total		**₹ 3,252**

Plan of Action

Goal: To build a wearable bike safety LED light vest Project Objectives: The aim of this project is to build a light vest which can increase the visibility of a cyclist on the road. This vest is designed smart enough to activate the turn signals and even activate the hazard lights in case of emergency.

Action Steps:

1. To build a lightweight portable vest with the main components LED strip which is controlled by an Arduino powered by external battery.
2. Program the microprocessor to turn signal features.
3. Upload the code for the prototype of the Arduino.
4. To develop a hands-free remote which will be attached to the bike frame so when we turn the bike, the turn signals register automatically.
5. To establish communication between the vest and remote.
6. To improve the facilities of the remote with accelerometer and a gyroscope which can automatically light up the turn signals without manual waving of the remote.
7. To assemble all of them together.
8. To Test the device.

Roles and Responsibilities:

Program for microprocessor, code for the prototype of Arduino by Nirdesh, Gayathri, Manya, Alagappan.

Building the vest and developing the remote by Kusuma, Bhavani

Timeline of Progress

A timeline is a chronological list of events that have happened or are about to happen. Project timelines are the same, they tell you what tasks you need to complete and how much time you have to complete them.

Time has a starring role in the success of any project. When you properly plan your project with a timeline, you get to understand how damaging a delay can be.

Sl.No.	Tasks	Timeline
1	Buying the Products	25/09/22
2	Program the microprocessor to turn signal features	02/10/22
3	Upload the code for the prototype of the Arduino	10/10/22
4	Develop a hands-free remote	25/10/22
5	To establish communication between the vest and remote	03/11/22
6	Assemble all of them together	25/11/12