GUJARAT TECHNOLOGIAL UNIVERSITY
AHEMADABAD- 382424

Vishwakarma Government Engineering College, Chandkheda-382424

A
Project report
On

SMART TRAFFIC LIGHTS SYSTEM

Prepared as a part of the requirement for the subject of
B.E- Semester- **IV**
(Power Electronics Branch)

Submitted by:

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Academic Year
2021-22

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Vishwakarma Government Engineering College – Chandkheda – 382424

Department of Power Electronics Engineering

CERTIFICATE

This is to certify that the Design Engineering 1B Report entitled "SMART TRAFFIC LIGHTS SYSTEM" submitted by

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The record of work completed by him under our supervision and assistance toward a partial completion of Design Engineering 1B (Power Electronics Engineering) at Gujarat Technological University. The work presented has, in our judgement, met the standard necessary for evaluation. To the best of our knowledge, the results contained in this Project Work have not been submitted to any other university or polytechnic

Date:

(Faculty Guide)
Prof. N. D. Mehta

(HOD)
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ABSTRACT

In many Indian cities, as well as other countries, traffic congestion is a big issue. Traffic congestion has resulted from signal failure, inadequate law enforcement, and inefficient traffic management. One of the most serious issues in Indian cities is that the present infrastructure cannot be expanded any further, leaving only better traffic management as an alternative. Congestion hurts the economy, the environment, and people's overall quality of life. As a result, it is past time to address the traffic congestion issue in a more efficient manner. Video data analysis, infrared sensors, inductive loop detection, wireless sensor networks, and other approaches are among the options for traffic control.

Traffic congestion will be decreased as a result of using this innovative technology. Bottlenecks will be identified early on, allowing for the implementation of early preventative measures, saving the driver time and money.

In addition, the system allows the user to ask about the traffic conditions at a particular intersection. This prototype was built to provide useful information about the road conditions in a smart city.

The system can also inform the user about the traffic conditions in a particular area. It can also create a web application that provides useful information to the authorities concerned with the smart city project.

The system allows the user to ask about the traffic conditions at a particular location. It is also built with a web application that can be used to collect data about the road conditions.

ACKNOWLEDGEMENT

We sincerely thank our guide Prof. N. D. Mehta for guiding us through the technicalities and science behind the project. His support and encouragement helped us in dealing with core problems of the project.

We also gratefully acknowledge Head of the department I. N. Trivedi and faculty members of power electronics engineering Department, Prof. N. D. Mehta, Dr. A. M. Haque and Dr. N. N. Bhupatami for providing valuable support for the project.

Finally, we should like to express our gratitude to all the faculties and classmates for helping throughout the project.

Thanking you,

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CHAPTER 1

Canvases

1.1 AEIOU SUMMARY

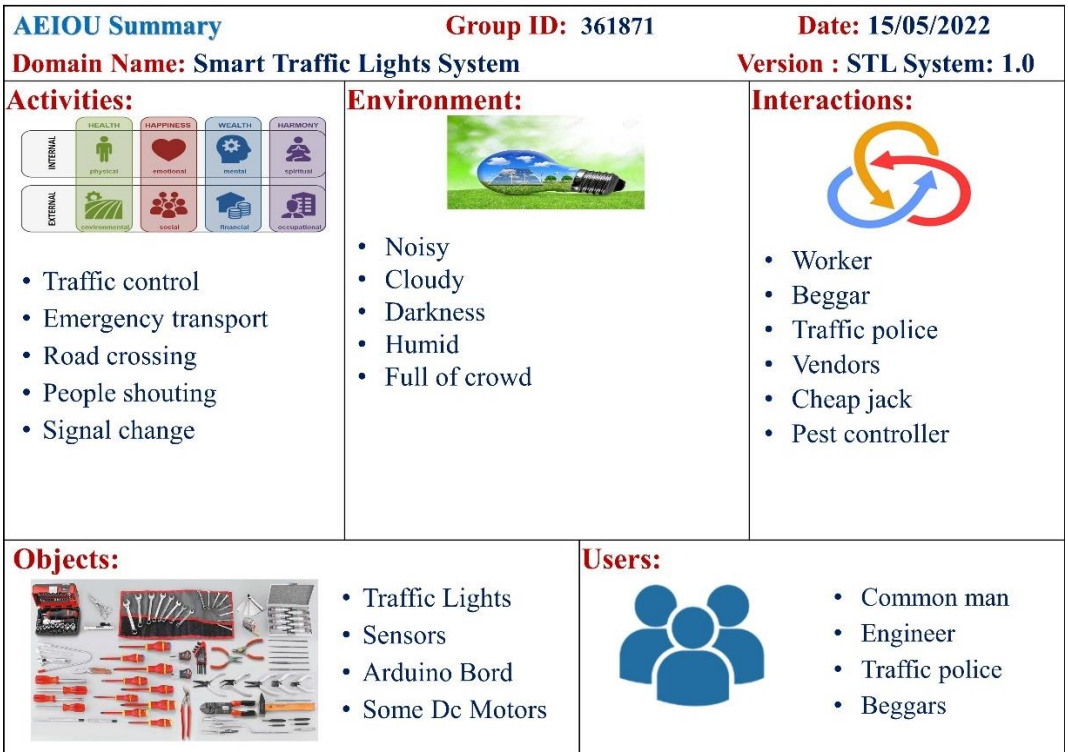


FIGURE 1 AEIOU SUMMARY

Users: - Our project users are as follows

- Common man
- Engineer
- Traffic police
- Beggar

Activities: - This section will include the applications of the product such as following

- Traffic control
- Emergency transport
- Road crossing
- People shouting
- Signal change

Environment: - In this will include the effect of the objects placed in its surrounding such as following

- Noisy
- Cloudy

- Darkness
- Humid
- Full of crowd

Interaction: - This will include the stakeholders such as following here,

- Traffic police
- Worker
- Beggar
- Vendor
- Cheap jack
- Pest controller

Objects: - In this section of the canvas include the equipment used the production such as follow

- Traffic Lights
- Sensors
- Arduino Bord
- Some Dc Motors

1.2 EMPATHY CANVAS: -

This is the first step of the project or a problem. So, in this canvas, we will find out what is user? Who is a user? What is stakeholder? Who are they? And what are the broad stories of their activities?

Empathy Canvas			**Group ID: 361871**
Design For:	Smart Traffic Lights System	**Design By:**	5 Fantastic
Date & Version :	15/05/2022 STL system: 1.0		
User: 	• Common man • Traffic police • Engineer • Beggars • Business traitors	**Stack Holder:** 	• Regional transport • Corporator • Maintenance staff • Traffic man • A.M.C
Activities: 	• Traffic control • Road crossing • Signal change		• Emergency transport • People shouting • People used phone on traffic
Story Boarding Happy Story 	We have to travel to university road one day for a traffic observation. The traffic cops are meticulous in their handling of the situation.		
Happy Story 	We were once on our way to an observation. In the midst of a traffic gridlock, we watched from an ambulance stand. When a police officer noticed it, he acted quickly to clear the route for an ambulance.		
Sad Story 	I was riding my bike to my collage for my examination one day when I encountered traffic on the center road of my collage and became stopped in it. I became really late, and as a result, I failed my exam.		
Sad Story 	Because traffic lights are malfunctioning, accidents occur, and there is a lengthy traffic bottleneck.		

FIGURE 2 EMPATHY CANVAS

The User: - In this stage, we find the various users which are directly or indirectly related to our project

- Traffic police
- Beggars
- Labor
- Saints
- Engineer
- Business traitors

Stakeholders: - In this stage, we find the user who will directly or indirectly related to users. Stakeholders mean a person or organization with an interest.

- Regional transport
- Corporator
- Society
- Maintenance staff
- Traffic man
- Gov. department of transport
- A.M.C

Activities: - Are directly or indirectly related to stakeholders.

- Traffic control
- Emergency transport
- Road crossing
- People shouting
- Signal change
- Vehicle noise
- Braking rule
- Many wheels borrow
- People used phone on traffic

Story Boarding: -

- **Happy: -** We have to travel to university road one day for a traffic observation. The traffic cops are meticulous in their handling of the situation.
- **Happy: -** We were once on our way to an observation. In the midst of a traffic gridlock, we watched from an ambulance stand. When a police officer noticed it, he acted quickly to clear the route for an ambulance.
- **Sad: -** I was riding my bike to my collage for my examination one day when I encountered traffic on the canter road of my collage and became stopped in it. I became really late, and as a result, I failed my exam.

❖ **Sad: -** Because traffic lights are malfunctioning, accidents occur, and there is a lengthy traffic bottleneck.

1.3 IDEATION CANVAS

This canvas consists of the ideology behind the user, so in this canvas some brief ideas are expressed. People section consists of persons related to user technically and similar person may relate to user. Then we divided activities in social and technical and try to find out the importance of each activity and situations & location regarding are find out related to each.

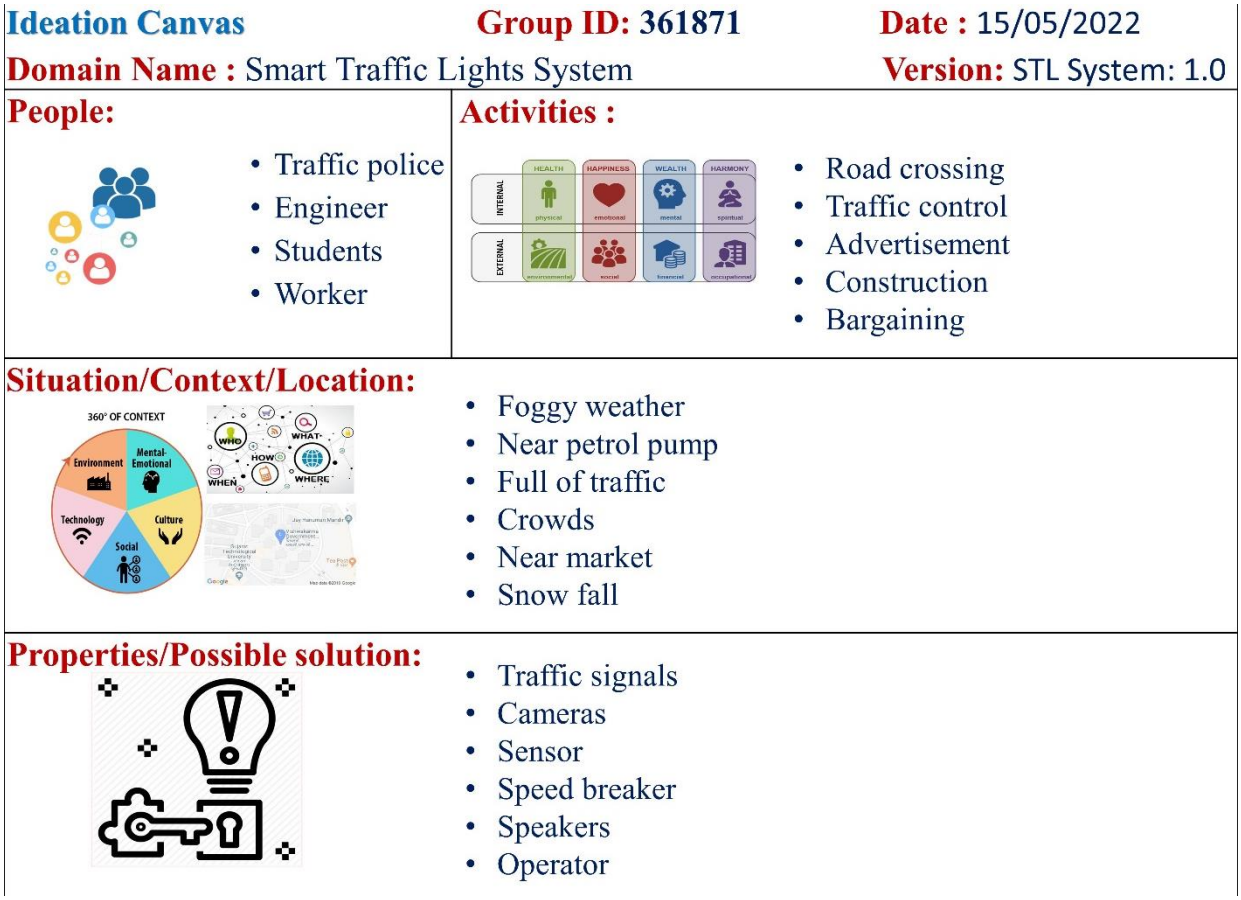


FIGURE 3 IDEATION CANVAS

People: -

- Traffic police
- Beggars
- Labor
- Saints
- Engineer
- Business traitors

Activities: -

- Traffic control
- Emergency transport
- Road crossing
- People shouting
- Signal change
- Vehicle noise
- Braking rule
- Many wheels borrow
- People used phone on traffic

Situation/context/location: -

- Near hospitals
- Near petrol pump
- Full of traffic
- Crowds
- Rain
- Snow fall
- Foggy weather
- Rules breakers
- Near market

Props/possible solution: -

- Traffic signals
- Cameras
- Sensor
- Ultrasonic sensor
- Integrated development environment
- Arduino
- Software
- Speed breaker
- Speakers
- Operator

1.4 PRODUCT DEVELOPMENT CANVAS

This step is development of the product. From possible solution, you have idea about what is product? In this canvas, following things is to do.

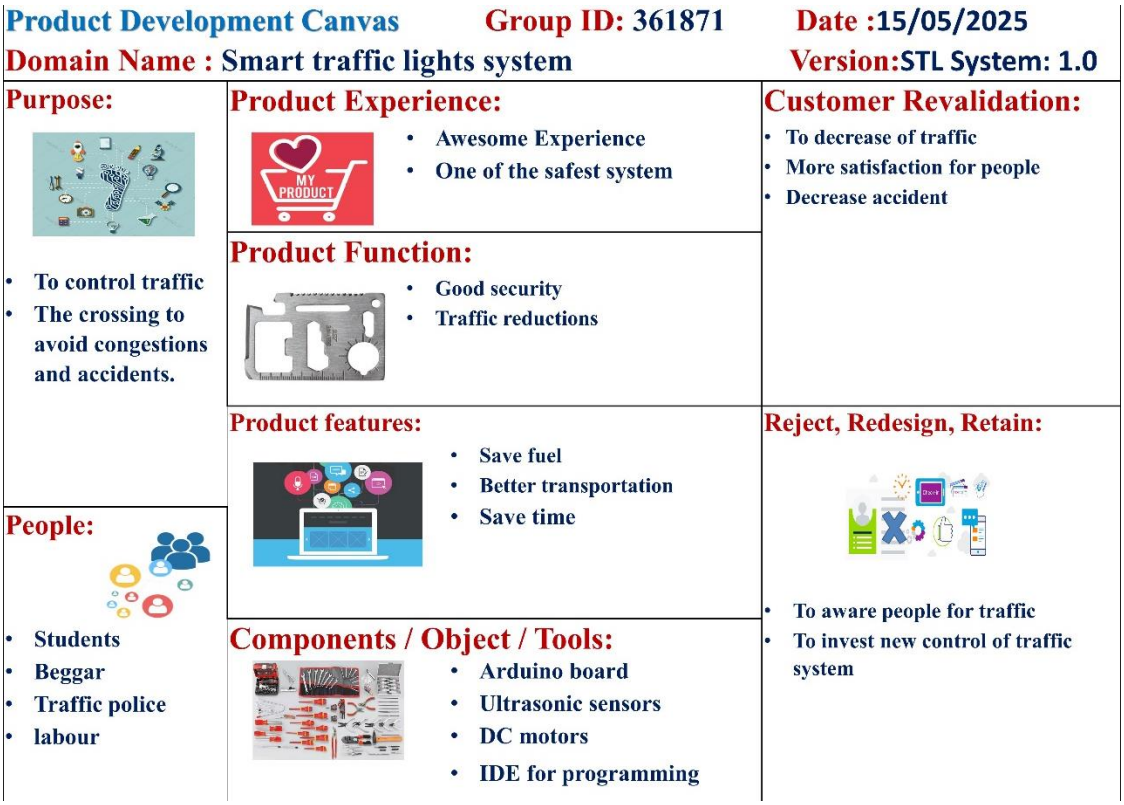


FIGURE 4 PRODUCT DEVELOPMENT CANVAS

Purpose: -

- To control traffic
- To make environment clean
- Save time
- Save fuel
- Decrease accidents
- Better transport
- The crossing to avoid congestions and accidents

People: -

- Students
- Common man

- Collegians
- Beggar
- Traffic police
- Labour

Components: -

- Arduino
- LED (generic)
- Cameras
- Resisters
- IDE for language
- Connecting cables
- Breadboard
- Ultrasonic sensor

Product features: -

- Traffic reduction
- Good security
- Can enhance traffic signal performance
- System work with Arduino nano
- Four-way traffic management system
- Management depends on density of traffic
- Easy to understand
- System reduces traffic jam
- Improve the speed and efficiency of suitable transport modes

Product functions: -

- Pedestrian traffic
- Intelligently route vehicle

Product experience: -

- Awesome Experience
- One of the safest systems
- Easy to use

Customer revalidation: -

- Decrease of traffic

- More satisfaction for people
- Decrease accident

Reject/Redesign/Retain (3-R): -

- IR sensor for density measurement is rejected by people
- Now, we use Ultrasonic for density

1.5 MIND MAPPING: -

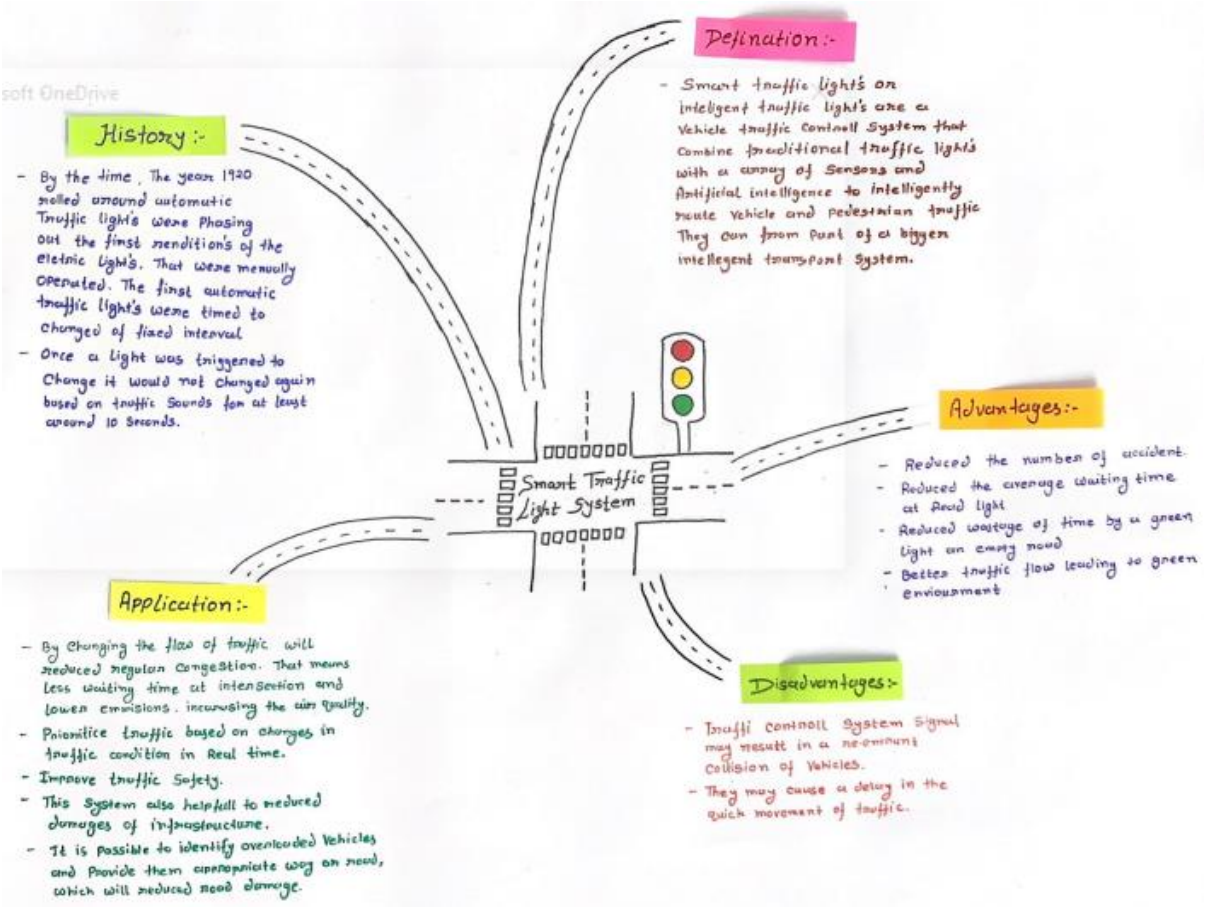


FIGURE 5 MIND MAPPING

Pre-design

1.7 LEARNING NEED MATRIX

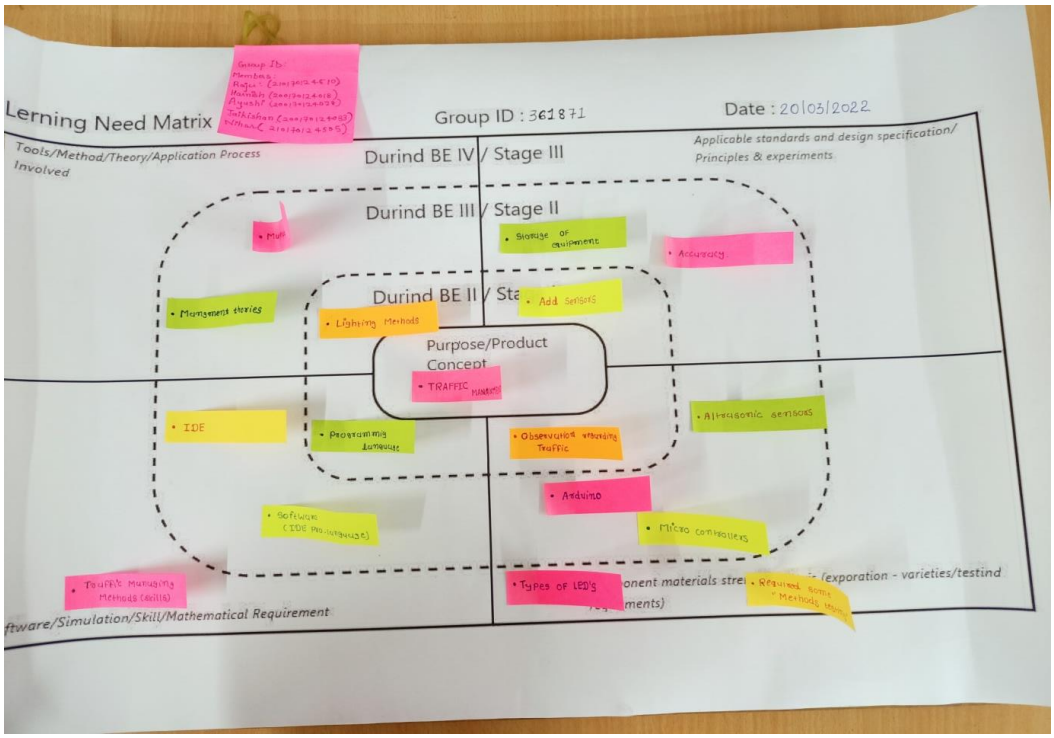


FIGURE 6 LNM

FIGURE 7 PROTOTYPE

CHAPTER 2

2.1 Introduction: -

The major goal of this project is to show that if the other light has no traffic, it is not necessary to wait for it. That signal will be skipped by the system, which will then go on to the next. The Arduino will be used to read data from the ultrasonic sensor and compute distance. This distance will indicate whether or not any vehicle is approaching the signal, and traffic signals will be managed accordingly.

The major goal was to avoid using the delay function since we needed to continually receive data from ultrasonic sensors while also controlling signals, which necessitated its usage.

So, we utilised the timer one library, which is used to repeatedly measure a period of time in microseconds and call an interrupt function at the conclusion of each period. We will read from the sensors in this function, and regulate the traffic signals in the loop function.

Keywords: - Arduino mega 2560, ultrasonic sensor, LECs,

2.2 Literature survey: -

In the past, the researchers had gone through different types of technologies. A brief survey of various solutions to the tragic congestion problems are presented.

This was presented in the density base traffic light system used ultrasonic sensor. In this a density sensor network is being used. To define the direction of any emergency vehicle, system uses a fuzzy logic and by collecting all the information the central monitoring system gives the corresponding appropriate response.

So, we chose to do automatic system which doesn't require any manual operation, some methods through various papers which we have surveyed are as follows.

CHAPTER 3

3.1 Construction: -

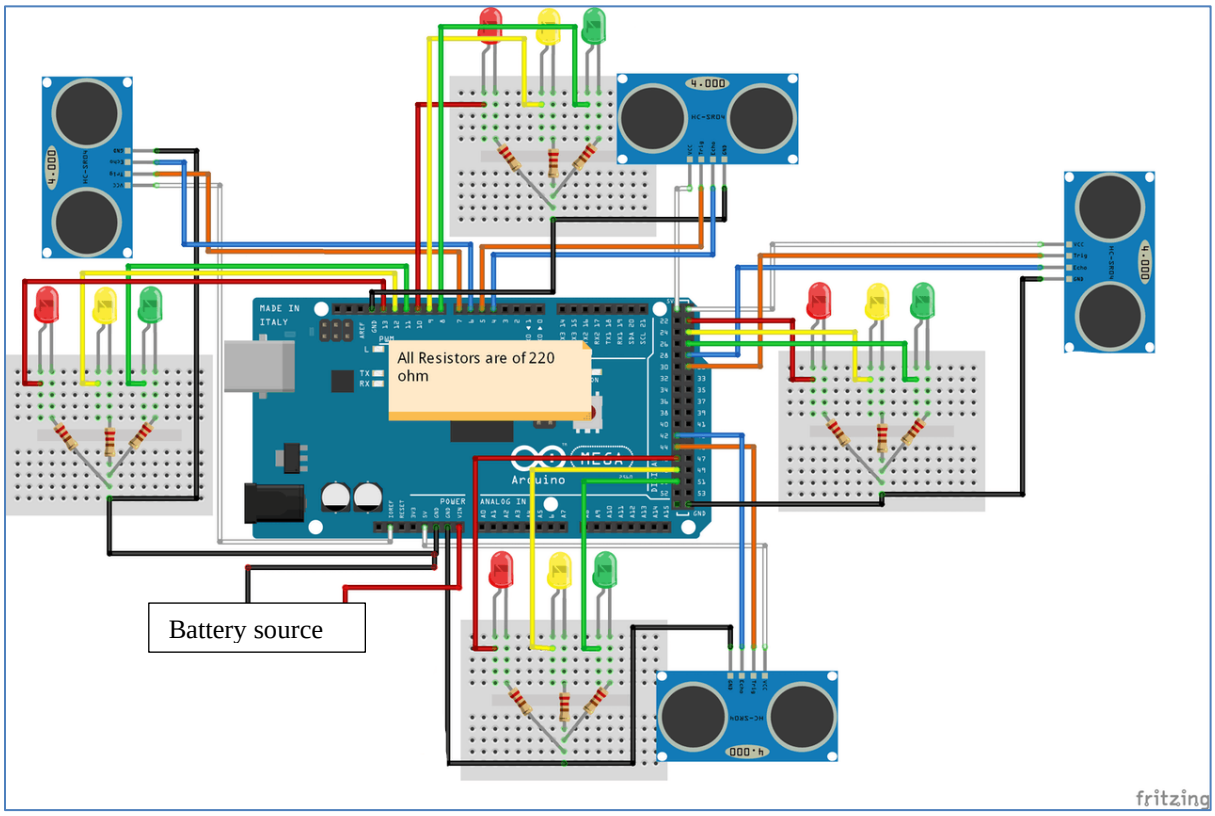


FIGURE 8 CONSTRUCTION OF SMART TRAFFIC LIGHT SYSTEM (STLS)

Here,

we use four ultrasonic sensors (HC-SR04) for density measurement of live traffic.

Use LEDs (red, green and yellow) total number of led is 12.

Used register (200-220 ohms) for safety of LEDs on working stage.

We used Arduino mega 2560 to controlling allover system.

3.2 Block diagram: -

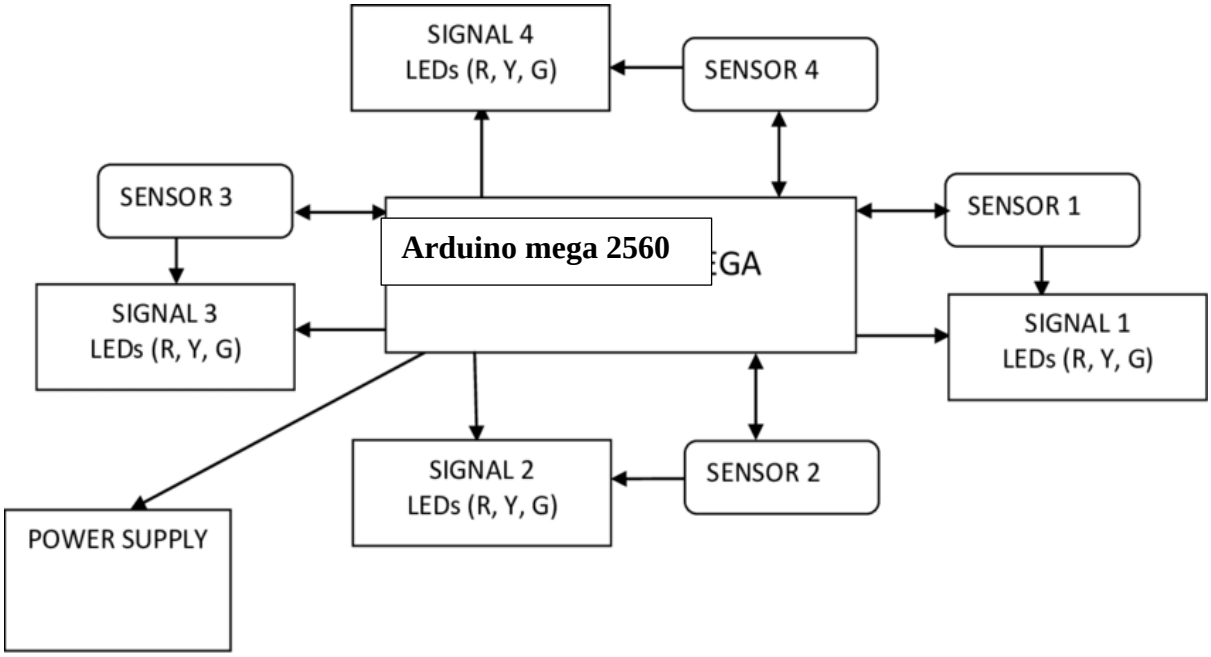


FIGURE 9 BLOCK DIAGRAM OF STLS

3.3 Working: -

The working of the project is divided into three steps: -

- If there are site visitors at all the signals, then the system will work typically by controlling the alerts one by one.
- If there are no site visitors near a signal, then the machine will skip this sign and will move on to the subsequent one. For example, if there is no vehicle at sign 2, 3 and presently the system is permitting vehicles at sign 1 to pass. Then after signal 1, the gadget will move on to sign 4 skipping sign 2 and 3.
- If there are no visitors at all the 4 signals, machine will stop at the contemporary signal and will solely move on the subsequent signal if there will be visitors at any other signal.

Arduino is the major part of this challenge and it will be used to read from ultrasonic sensor HC-SR04 and calculate the distance. This distance will inform us if any vehicle is close to the signal or now not and according to that the visitors signals will be controlled.

The important task was once to avoid use of extend because we have to always read from the ultrasonic sensors and additionally at the same time, we have to manipulate signals which requires the use of lengthen function.

3.4 flow chart: -

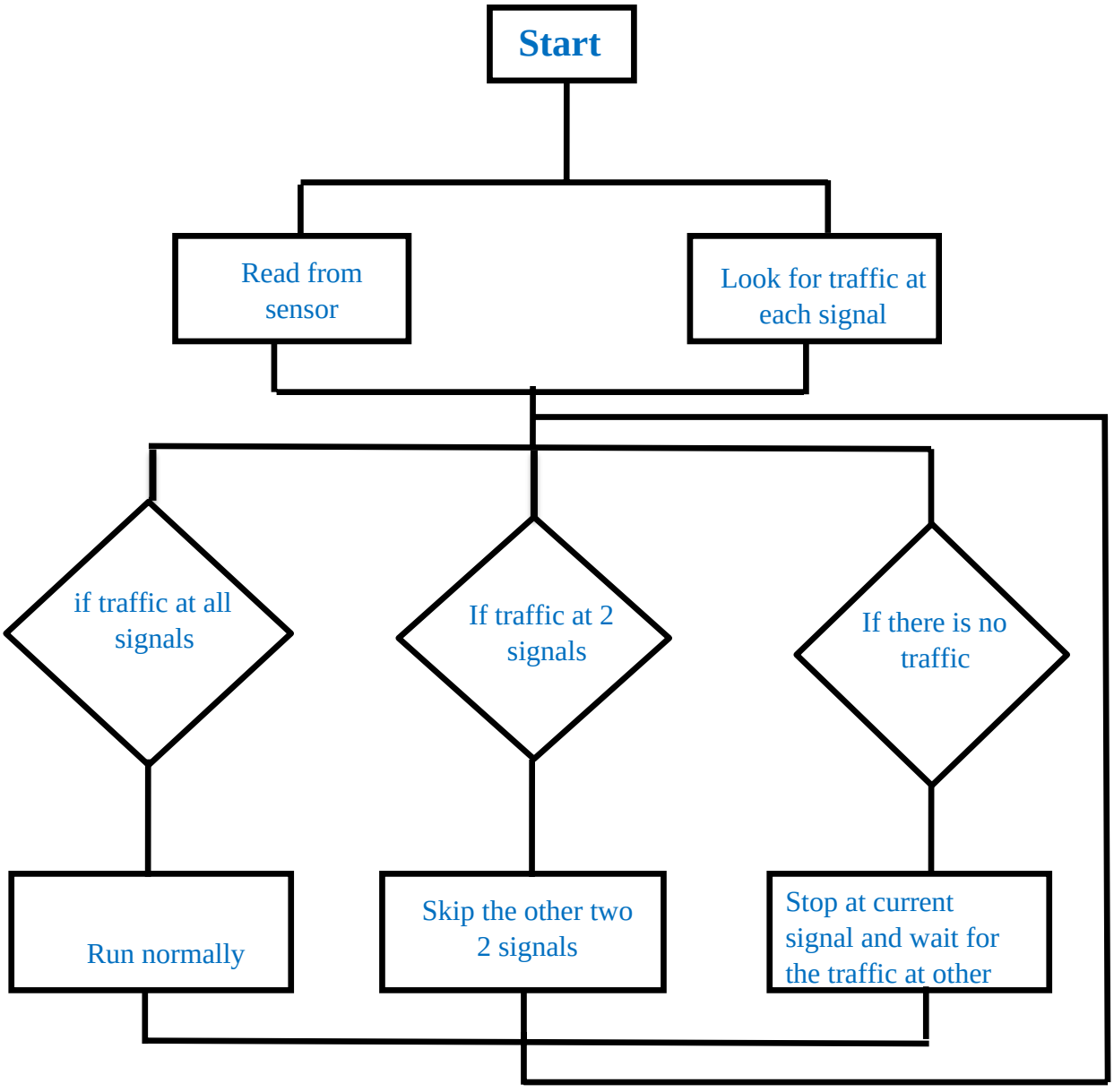


FIGURE 10 FLOW CHART

CHAPTER 4

4.1 Component list: -

- Arduino Mega **2560**
- 4 - **HC-SR04** ultrasonic sensors
- 4 - Red LEDs
- 4 - Green LEDs
- 4 - Yellow LEDs
- 12 - **220-ohm** resistors
- Connecting wires
- Breadboard

4.1.1 Arduino mega 2560: -

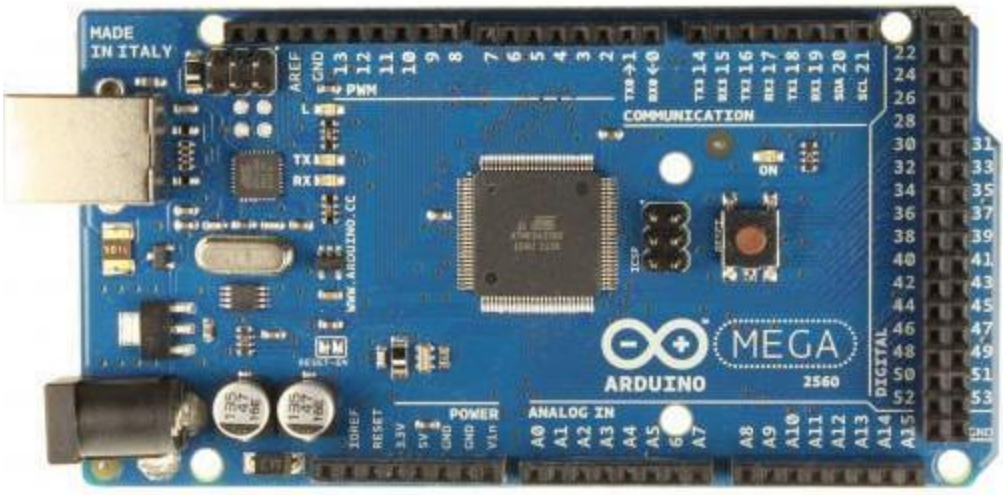


FIGURE 11 ARDUINO MEGA 2560

The Mega 2560 is a microcontroller board based totally on the ATmega2560. It has 54 digital input/output pins (of which 15 can be used as PWM outputs), sixteen analog inputs, 4 UARTs (hardware serial ports), a sixteen MHz crystal oscillator, a USB connection, a power jack, an ICSP header, and a reset button. It incorporates everything wanted to support the microcontroller; really connect it to a laptop with a USB cable or power it with a AC-to-DC adapter or battery to get started. The Mega 2560 board is like minded with most shields designed for the Uno and the former boards Demilune or Decimal.

4.1.2 Technical specification: -

MICROCONTROLLER	ATMEGA2560
Operating Voltage	5V
Input Voltage (Recommended)	7-12V
Input Voltage (Limit)	6-20V
Digital I/O Pins	54 (of which 15 provide PWM output)
Analog Input Pins	16
Dc Current Per I/O Pin	20 mA
Dc Current For 3.3v Pin	50 mA
Flash Memory	256 KB of which 8 KB used by bootloader
SRAM	8 KB
EEPROM	4 KB
Clock Speed	16 MHz
LED_BUILTIN	13
Length	101.52 mm
Width	53.3 mm
Weight	37 g

TABLE 1 SPECIFICATION OF ATMEGA2560

4.1.3 Power source: -

The Mega 2560 can be powered through the USB connection or with an external energy supply. The power supply is selected automatically.

External (non-USB) strength can come either from an AC-to-DC adapter (wall-wart) or battery. The adapter can be linked by plugging a 2.1mm center-positive plug into the board's energy jack. Leads from a battery can be inserted in the GND and Vin pin headers of the POWER connector.

The board can operate on an exterior supply of 6 to 20 volts. If furnished with less than 7V, however,

the 5V pin might also supply much less than five volts and the board may additionally become unstable. If the usage of more than 12V, the voltage regulator can also overheat and damage the board. The advocated range is 7 to 12 volts.

4.1.4 Memory: -

The ATmega2560 has 256 KB of flash reminiscence for storing code (of which 8 KB is used for the bootloader), 8 KB of SRAM and 4 KB of EEPROM (which can be study and written with the EEPROM library).

4.2.1 ultrasonic sensor: -

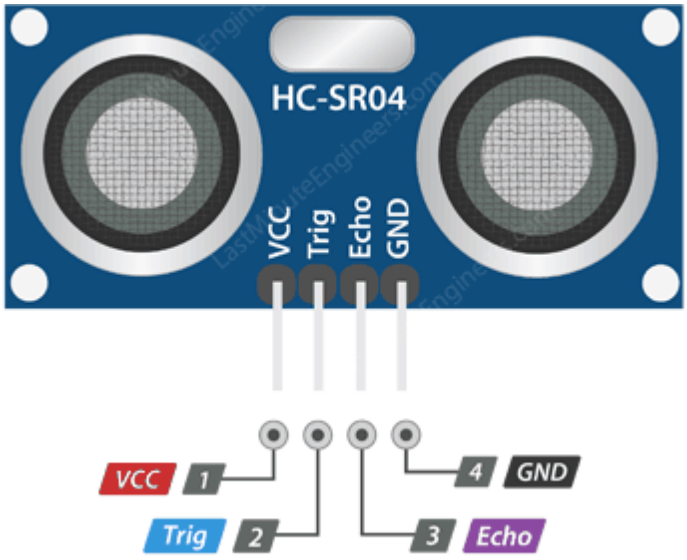


FIGURE 12 ULTRASONIC SENSOR HC-SR04

VCC is the power supply for HC-SR04 Ultrasonic distance sensor which we connect the 5V pin on the Arduino.

Trig (Trigger) pin is used to trigger the ultrasonic sound pulses.

Echo pin produces a pulse when the reflected signal is received. The length of the pulse is proportional to the time it took for the transmitted signal to be detected.

GND should be connected to the ground of Arduino.

The HC-SR04 Ultrasonic Distance Sensor is a sensor used for detecting the distance to an object the usage of sonar. It's ideal for any robotics tasks you have which require you to avoid objects, by way of detecting how close they are you can steer away from them!

The HC-SR04 makes use of non-contact ultrasound sonar to measure the distance to an object, and consists of two ultrasonic transmitters (basically speakers), a receiver, and a control circuit. The transmitters emit a excessive frequency ultrasonic sound, which bounce off any close by solid objects, and the receiver listens for any return echo. That echo is then processed through the control circuit to calculate the time distinction between the signal being transmitted and received. This time can due to this fact be used, along with some wise math, to calculate the distance between the sensor and the reflecting object!

4.2.2 HC-SR04 Ultrasonic Ranging Features: -

- Input Voltage: - 5V
- Current Draw: - 20mA (Max)
- Digital Output: - 5V
- Digital Output: - 0V (Low)
- Working Temperature: - -15°C to 70°C
- Sensing Angle: - 30° Cone
- Angle of Effect: - 15° Cone
- Ultrasonic Frequency: - 40kHz
- Range: - 2cm - 400cm

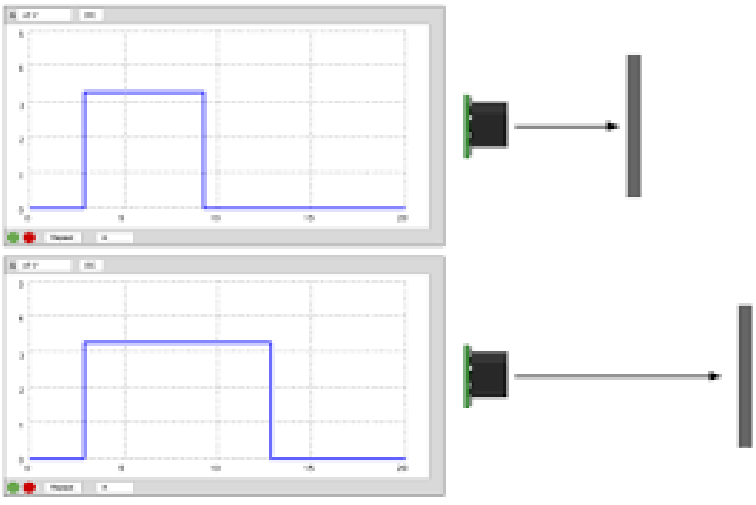
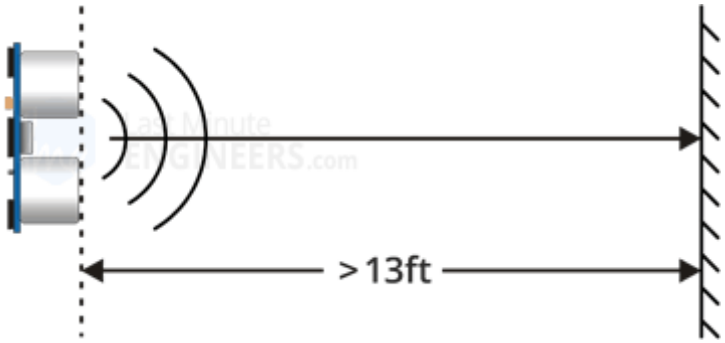


FIGURE 13 ULTRA-WAVES

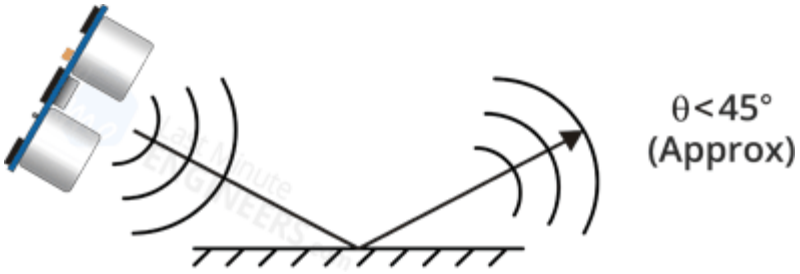
4.2.3 Limitations: -

In phrases of accuracy and overall usefulness, HC-SR04 ultrasonic distance sensor is simply great, especially in contrast to other cheap distance detection sensors. That doesn't mean that the HC-SR04 sensor is successful of measuring "everything". Following diagrams shows a few situations that the HC-SR04 is not designed to measure: -

1) The distance between the sensor and the object/obstacle is greater than 13 feet.



2) The object has its reflective floor at a shallow angle so that sound will no longer be reflected returned towards the sensor.



3) The object is too small to replicate enough sound again to the sensor. In addition, if your HC-SR04 sensor is mounted low on your device, you may additionally detect sound reflecting off of the floor

4) While experimenting with the sensor, we observed that some objects with soft, irregular surfaces (such as stuffed animals) absorb alternatively than reflect sound and consequently can be difficult for the HC-SR04 sensor to detect.

4.2.4 LEDs: -

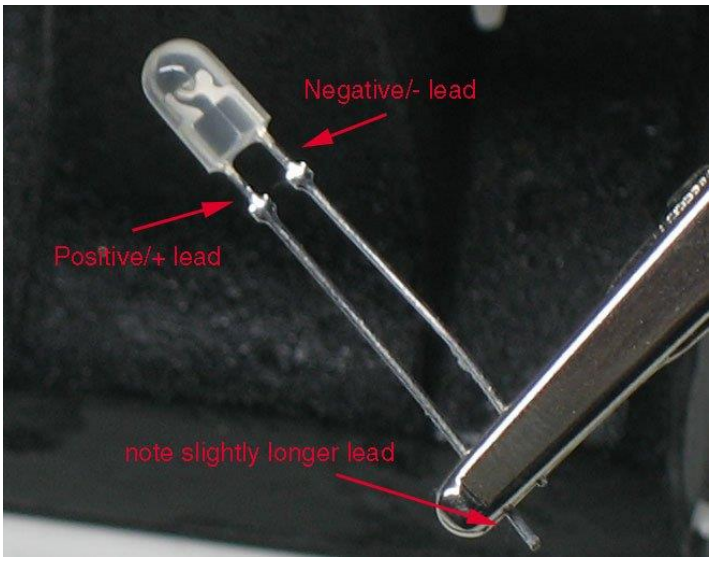
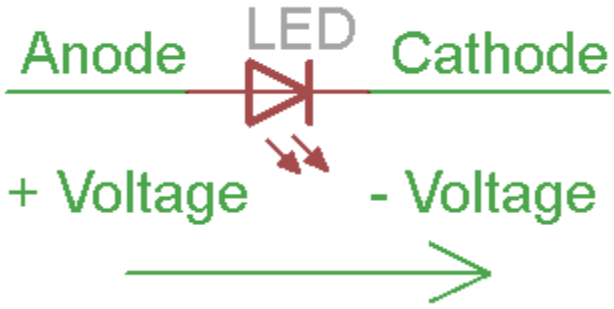


FIGURE 14 LED

LEDs are so common, they come in dozens of one-of-a-kind shapes and sizes. The LEDs you are most in all likelihood to use are the thru gap LEDs with two legs. There are loads of LEDs that are small and difficult to solder however these are handy to use with a breadboard due to the fact they have lengthy wires we can stick in. The clear or clear-is bulb is what protects the mild emitter (that's the place the magic happens). In fact, the first two letters of LED stand for Light Emitting.



- The longer lead goes to the more-positive voltage.
- Current goes in one direction, from the anode (positive) to the cathode (negative)
- LEDs that are 'backwards' might not work - but they might not spoil both

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- https://www.fierceelectronics.com/sensors/what-ultrasonic-sensor
- https://www.fierceelectronics.com/sensors/what-ultrasonic-sensor
- https://www.youthkiawaaz.com/2017/12/indian-roads-traffic-problems-and-the-common-man/

Conclusion: -

Our country urgently requires an effective traffic management system, as India experiences 384 road accidents per day. An innovative technology is built in this project to alleviate traffic congestion and undesirable time delays. The frustrating chaos of traffic may be efficiently channeled with this technology in the field by distributing time periods depending on the merit of the vehicle load in various lanes of multi-junction crossings. We were able to effectively deploy the prototype at a laboratory size with excellent results. The next step is to test this schema in a real-world setting to see how it performs before deploying it on a larger scale. We believe that this will result in a paradigm shift in traffic management systems and their implementation in real-world scenarios.

Future work: -

Next semester we'll implement this project domain in a mini model and use a RGB led in lieu of three separate LEDs. And we will use high range sensor to sense well. And now we are also work on Arduino programming. Pro-language work will also be finished in next semester.

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Chandkheda – 382424
(Affiliated to Gujarat Technological University)

CONTINUOUS ASSESSMENT CARD

COLLEGE NAME: Vishwakarma Government Engineering College, Chandkheda (017) COLLEGE CODE: 017	
SUBJECT NAME: Design Engineering 1 B	
SUBJECT CODE: 3140005	SEMESTER: 4th
BRANCH: Power Electronics (024)	ACADEMIC YEAR: 2021 - 22

TEAM NAME: 5 Fantastic	TEAM ID: 361871
PROJECT TITLE/DOMAIN: **Smart Traffic Light System**	

SR. NO.	TEAM MEMBER'S NAME	ENROLLMENT NO.
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INTERNAL GUIDE NAME:
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MONTHLY ASSESSMENT - I

(Observation, Empathy and Define Phase)

Date: 14/05/2022

1. Why students/team have taken above mentioned domain? (Please specify the reason)

   (Note: For more content or information, one may attach additional pages to this card.)

A Smart Traffic Light System leverages technology to improve traffic outcomes by
introducing a sensing network, which provides feedback to the existing network, so that
it can adapt to the changing traffic density patterns and provide necessary signals to the
controller in real-time.

2. How frequently student team has gone for observation on field, mention with date, place, time etc.? Which are the key observations that they have noticed?

One day (05/08/21 “time 10:00 to 12:00”) my team members and I went for observation
on some places and I noticed some traffic problems.

3. A. How many interactions/interviews team members have done?

Once all our team members had discussed face-to-face about the project, after that we
had a meeting online two-three times.

B. Who are the user and various stakeholders on domain? Describe their persona (Name, age, occupation/education, roles and responsibility etc.)

Stakeholders: - Regional transport, corporator, society, maintenance staff, traffic Man,
gov. department of transport.

C. List out the questions asked by team while having observation and interview?

Types of traffic management systems?
What is traffic management?
Traffic problems in over country?
What can we do for traffic problems?
What are the benefits of smart traffic system?
What is the future of smart traffic light system?
What components can we use in this project?
How to use GPS in traffic monitoring system?
How to visualize the traffic of city roads?
Can we use GSM in traffic management?

4. What is something special/random/unusual (i.e. activity, environment, interaction, object or user) team have observed at the domain? Please elaborate the conditions with photographs if available.

The mutual interference between adjacent traffic light systems, the disparity of cars flow with time, the accidents, the passage of emergency vehicles, and the pedestrian crossing are not implemented in the existing traffic system. This leads to traffic jam and congestion. We propose a system based on Arduino microcontroller that evaluates the Traffic density using ultrasonic sensors and accomplishes dynamic timing slots with different levels.

5. Enlist any five major problems observed by your team in the respective domain. Mention any one for which you have empathize user the most and which might become your problem statement. Give reasons of selection of particular problem/issue based on empathy.

There are some things kinds of basic control system for an intersection.	
No control	Signalization
Guide signing only	Police officer
Guide and warning signing	
Yield control	
Stop control	

6. Define your "PROBLEM DEFINITION" for the project as per below format. Which might be refine till end of Ideation phase if you wish.

SUGESTIONS BY INTERNAL GUIDE:

AEIOU CANVAS SUGGESTIONS:
EMPATHY CANVAS SUGGESTIONS:
MIND MAPPING SUGGESTIONS:
GENERAL SUGESTIONS:
Overall, Mark (Out of 05):

GUIDE SIGNATURE:

Date:

MONTHLY ASSESSMENT - II

(Ideation and Product Development Phase)

Date: 14/05/2022

1. Explain briefly Ideation thought process and efforts of your team to reach ideas for listed problems.

It's challenging to gain the perspective to find design solutions. To have productive
ideation sessions, you'll need a dedicated environment for standing back to seek and see
every angle. it's not always easy to get everyone to share their brilliant ideas.

2. Enlist any five effective ideas to address the probable listed problems with reason.

-Evaluate the outcome
-Identify the problem
-Evaluate the results and if necessary, start the problem again
-Search for alternatives

3. Explain the most effective possible solution proposed for the problem.

Begin with a positive approach	Prepare for the worst
Define the problem	Set a deadline for your solution
Address the situation from different direction	Take responsibility for implementing you decision
Brainstorm solution to the problem	Solve your problem

4. Explain the features, functions and working principles/technology/pattern of your proposed solution.

Features: - Traffic reduction, good security, can enhance traffic signal performance, System work with Arduino nano, Four-way traffic management system, Management depends on density of traffic, Easy to understand, System reduces traffic jam
Functions: - Pedestrian traffic, Intelligently route vehicle
Working principle: - the main controller, control circuit, counter, timer, decoder, clock
signal generator, decoder drive circuit and digital display decoder drive circuit are
needed to complete the whole process of controlling the traffic light. And then the
signals are passed by the clock signal generator to the main control circuit and counter,
and then from counter to the decoder, finally revealed on the display.

5. Enlist major advantages and disadvantages (at least three) of the proposed solution.

Advantages: -
• Reduced the average waiting time at read light
• Reduced wastage if time by a green light an empty road
• Better traffic flow leading to green environment
• Reduced the number of accidents.
Disadvantages: -
• Traffic control signals may result in a re-entrant collision of vehicles.
• They may cause a delay in the quick movement of traffic

6. Briefly mention refinement on PDC based on User/Stakeholder's feedback on your concept.

When we told our idea to the people, first we had to understand it well, then they understood that this concept can reduce a lot of time and accidents of the people. And people had also raised some question on this concept.

-Can you implement this concept in our country?

-If yes! Then how?

SUGESTIONS BY GUIDE:

IDEATION CANVAS SUGGESTIONS:
PRODUCT DEVELOPMENT CANVAS SUGGESTIONS:
LEARNING NEEDS MATRIX SUGGESTIONS (in case of 4th Sem and onwards):
GENERAL SUGGESTIONS:
Overall, Mark considering assessment I (Out of 05):

GUIDE SIGNATURE:

Date:

MONTHLY ASSESSMENT - III

(Detail Design, Prototype and Test Phase)

Date: 07/12/2021

(This assessment shall be done by another guide of department or interdepartmentally along with guide)

1. Which theoretical subjects/concepts are involved with your project? How it is useful to your project?

These traditional traffic signals have many problems including inefficient time
management in road intersections; they are not immune to some environmental
conditions, like rain; and they have no means of giving priority to emergency vehicles.
New technologies like Vehicular Ad-hoc Networks (VANET) and Internet of Vehicles
enable vehicles to communicate with those nearby and with a dedicated infrastructure
wirelessly.
We present local traffic management of an intersection based on the demands of future
Smart Cities for fairness, reducing commute time, providing reasonable traffic flow,
reducing traffic congestion, and giving priority to emergency vehicles.

2. Which software/design tool/Skills you have learned/applied during the project? Explain the features of it.

Software used during project: - IDE (integrated development environment)
An integrated development environment (IDE) often includes a code editor, a compiler
or interpreter, and a debugger, all of which are available through a single graphical user
interface (GUI). In the code editor, the user writes and modifies source code. The
compiler converts the source code into a machine-readable language that can be
executed. The debugger, on the other hand, examines the software for any flaws or defects.

3. Explain the prototype/model prepared by the student/team.

The proposed system is a smart traffic controlling system where an Ultrasonic sensor
installed on one side of road 8-10 meters down the road (which represent heavy traffic
zone) and another set of magnetic field senor that detect the presence of ambulance in the
road and both of them send signals to the first microcontroller, the one that controls the
sensors which in turn communicate to the second microcontroller, the one that
manipulates the traffic light to take the appropriate action

4. What are the materials, technology, things have utilized to make the prototype/model?

Arduino mega 2560	Ultrasonic sensor HC-SR04
Red LEDs	Breadboard
Green LEDs	Pro. Language
Yellow LEDs	IDE
Some Resistors	
Jumper Cables	

5. How many Iterations have you done to reach final solution? Explain modification/revise parameters/characteristics for each iteration.

For batter experience we use ultrasound waves for sensing density of traffic.
Also, other sensors for high rang measurement: -
- MAXBOTIX MB7137 I2CXL – 1 ft. to 27 ft.
- MB1013 LV – 1 ft. to 34 ft
- US-100 – 1 ft. to 15 ft.
- MB1010

6. What is the scope of the project? How you are planning to implement it in future?

Different priority levels for numerous situations and scenarios might be considered for future orientations. The fundamental challenge with IoT is that the entire system's security must be prioritised rather than a specific IoT layer, device, or software. As a result, combining the complete traffic management system with multiple layer security for data collected from diverse sources might be a future topic of interest. In order to better serve them, an emergency signal for an emergency vehicle (such as an ambulance) can also be provided.

SUGESTIONS BY EVALUATOR:

PROTOTYPE/MODEL SUGGESTIONS:
GENERAL SUGESTIONS:
Overall, Mark considering assessment I & II (Out of 10):

Department/Interdepartmental Evaluator name and sign:
Guide sign:

Date:

FINAL ASSESSMENT AT THE END OF SEMESTER

EVALUATOR MEMBERS DETAILS:

Sr. No.	NAME OF EVALUATOR	INSTITUTE & DEPARTMENT	SIGN.
1.			
2.			
3.			

ASSESSMENT SUMMARY:

CONTINUOUS ASSESSMENT SUMMARY:	MARKS OBTAINED
MONTHLY ASSESSMENT - I	
MONTHLY ASSESSMENT - II	
MONTHLY ASSESSMENT - III	
TOTAL (Out of 20)	
FINAL EVALUATION/VIVA MARKS (Out of 80)	
TOTAL (Out of 100)	
EXAMINER COMMENTS/SUGGESTIONS:	

DATE:

INTERNAL GUIDE SIGN
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COLLEGE SEAL