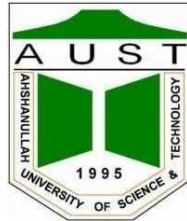


# Ahsanullah University of Science & Technology

Department of Computer Science & Engineering

SPRING 2020



CSE3216

Microcontroller Based Syster

**Project Proposal**

Project Name: Traffic & Railway Control System

## Submitted To

**Afsana Ahmed Munia**

Assistant Professor, AUST

**Nibir Chandra Mandal**

Lecturer, AUST

## Submitted By

Name	ID
Jarin Sultana	17.02.04.068
Rafsan Habib	17.02.04.069
Alam Khan	17.02.04.084
Nafisa Hossain	17.02.04.112

## **Objective:**

The main objective of our project is to design a traffic control system for a smart city where the timing of signals will change automatically.

Traffic congestion is a severe problem in Dhaka. So it is time to shift from manual mode to an automated system with decision-making capabilities.

Present-day traffic signaling systems are fixed time based which may render inefficient if one lane is operational than the others. To optimize this problem we have made a framework for an intelligent traffic control system. Sometimes higher traffic presence at one side of the junction demands longer green time as compared to the standard allotted time. We, therefore, propose here a mechanism in which the time period of green light and red light is assigned on the basis of the presence of the traffic present at that time. This can be achieved by using an ultrasonic sensor. The sensors which are present on the sides of the road will detect the presence of the vehicles and send the information to the microcontroller(Arduino) where it will decide how long a flank will be open or when to change over the signal lights.

The railway is one of the most important mediums of transportation. But in this modern age of technology, we still rely on manpower to regulate rail control. We should convert the regulation of rail from manpower to digitized control as manpower has limited capacity and prone to commit an error. We are going to use a system that uses sensors to detect trains and trigger the barrier using automation to restrict the movement of vehicles.

## **Social Values:**

Traffic jams are like a burden for us. It consumes our precious time, which is not exchangeable with others. We pass our time as lazy during the traffic jam condition. Students may get more education or pleasure, the scientist may get more time for research, doctors may get more chances to give patients patience, and ordinary people may get more time to realize their lives. Increasing traffic congestion does impose costs not only on travelers but also on the whole economic activities and finally affects national income. It has been difficult to develop and apply empirical measures of the extent of those economic costs. Traffic jams also cause stress for both the drivers and passengers which might lead to unwelcome events such as accidents which might lead to the early death of any driver/passenger/passersby.

Moreover, Railway accidents are also a major issue in Bangladesh nowadays. Every year we lose a lot of lives due to railway accidents. Human errors are accountable for 72% of rail accidents, according to Bangladesh Railway(19 December 2020: Dhaka Tribune). By using our project we can minimize this rate of death.

## **Required Components:**

The following parts and tools are required for building this project:

- Arduino Mega 2560
- 10 X HC-SR04 Ultrasonic Sensors
- 6X IR Obstacle Sensors
- 6 X Red LEDs
- 6 X Green LEDs
- 6 X Yellow LEDs
- 20 X 220 Ohm Resistors
- Jumper Cables
- Breadboards
- 12-volt Battery
- On /Off Switch
- Buzzer

## **Working Procedures:**

In Road System,

- If there is traffic at all the signals, then the system will work normally by controlling the signals one by one.
- If there is no traffic near a signal, then the system will skip this signal and will move on to the next one. For example, if there is no vehicle at signal 2, 3 and currently the system is allowing vehicles at signal 1 to pass. Then after signal 1, the system will move on to signal 4 skipping signal 2 and 3.
- If there is no traffic at all the 4 signals, then also the system will work normally by controlling the signals one by one.

In Railway System,

- If there is a train coming from any side, then the system will restrict all the roads.
- If there is no train, then the roads will run according to the previously described road system.

Users can see all blocked and free roads by following red, yellow, and green LEDs.

**Estimated Budget:**

Equipment	Quantity	Budget(Tk)
Arduino Mega	1	920
HC-SR04 Ultrasonic Sensors	10	1200
IR Obstacle Sensors	6	420
LEDs	10	10
Resistors	20	50
Jumper Cables	As Required	100
Breadboards	3	120
12-volt Battery	2	80
Switch	As Required	50
Buzzer	5	10
Cardboard	1	80
<b>Total=</b>		<b>3040</b>

**Future Work:**

We will update this system when a vehicle tries to move even during a red signal, it will turn on an alarm to warn the driver of the vehicle and will send the alert to the traffic warden with the picture.

**Conclusion:**

Though the prototype model worked very efficiently with remarkable outputs, the real-life situation is going to be way more challenging and demanding. We hope that our system will bring about some changes in the current traffic management system and make our life easier than before.