

MICROCONTROLLER BASED TRAFFIC CONTROL SYSTEM

BY

Md. Shahibul Hasan
ID: 101-15-948

This Report Presented in Partial Fulfillment of the Requirements for the
Degree of Bachelor of Science in Computer Science and Engineering.

Supervised By

Mahmudul Hasan
Lecturer of
Computer Science & Engineering
Comilla University



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APPROVAL

This Project titled “**Microcontroller Based Traffic Control System**”, submitted by Md.Shahibul Hasan, ID No: 101-15-948 to the Department of Computer Science and Engineering, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 26 Jan 2013.

BOARD OF EXAMINERS

Dr Syed Akhter Hossain
Professor and Head

Department of Computer Science and Engineering
Faculty of Science & Information Technology
Daffodil International University

Chairman

Dr Yousuf Mahbubul Islam
Professor

Department of Computer Science and Engineering
Faculty of Science & Information Technology
Daffodil International University

Internal Examiner

Dr Md Kabirul Islam
Associate Professor

Department of Computer Science and Engineering
Faculty of Science & Information Technology
Daffodil International University

Internal Examiner

Dr Muhammad Shorif Uddin
Professor

Department of Computer Science and Engineering
Jahangirnagar University

External Examiner

DECLARATION

I hereby declare that, this project has been done by us under the supervision of **Mahmudul Hasan, Lecturer Department of CSE Comilla University**. I also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

Supervised by:

Mahmudul Hasan

Lecturer (Part Time)

CSE

Daffodil International University

Submitted by:

(Md.Shahibul Hasan)

ID: -101-15-948

Department of CSE

Daffodil International University

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ABSTRACT

This project is on “**Microcontroller Based Traffic Control System**”. This is a kind of Automation system, which helps to control intelligence traffic management by static time scheduling.

The aim of the Microcontroller based traffic management system is built up an intelligence management system. After assign a microcontroller generate its code for blink specific LED, built a circuit design into simulation software, loading this code into microcontroller and simulate it. If it is work properly than we burn a specific microcontroller and make a model of road and interface with the circuit board. If it is worked appropriately than we can implement this system.

The traffic control is a system which ensures the safety of pedestrian's from accident and maintained the direction of vehicles on the road. This is also save the life of general peoples. Bangladesh want an automatic traffic management system because it's heavy populations and heavy traffic jam. Our proposed work will manage the existing traffic system to follow an automatic real-time situation regarding situation based system. We analyzed various traffic places in different times in a whole day and making a daily traffic schedule of that traffic place and also included an imaging system. It is also collects information and stored into a server. It is a very simple to control the traffic light uses schedule timer for each phase but real time image processing management is too difficult but we able to do microcontroller based traffic control system . Traffic control problem is a big problem in our country at present and we hope this real-time technique will to solve the problem.

After implementation of all functions, the system is tested in different stages and it works successfully as Traffic Control System.

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Chapter One

Introduction

1.1 Introduction:

The population of the modern cities or urban is increase day by day which vehicular travel is increasing and lead to congestion problem. Traffic congestion occurred many critical moment and people also face many complex event on the road. It is the causes of traffic jam, accident and many others complex situation. For this traffic jam the people loss their valuable time, fuel and it are also effect on our environment. The oil is our national asset, we loss this asset for causes traffic jam.

This time we have to need an intelligence traffic management system but we have not any existing system now it maintained only situation based system manually using by hues number of police. Our proposed system will control this system with reduce the number of traffic police, collect images by close circuit camera (CC Camera), controlled automatically and also store information into a central database.

1.2 Overview:

The technique of traffic control system in Bangladesh is not well organized and automated. The traffic police maintained that manually. This is not well suited were as most of the development country uses intelligence automated system and Bangladesh control it manually. We have not any discipline in this existing system. We were not following any rules; the traffic police maintain that given signal over his hand for that some time they fetch complex situation and it causes accident. It had not any information collection system.

1.3 Objective:

The proposed system will reduce the traffic jam because we analysis the specific traffic signal various time in a day and make a schedule for that place and it controlled by following that schedule and also with image processing.

It will reduce the number of uses traffic police because this mechanism handled the signal atomically so we need only a traffic police into each traffic place and it will also reduce the complexity of the traffic point.

This mechanism will save the valuable time of the general public with its traffic jam free road and people finish their daily work with his great satisfaction.

The system has a central database all of the information are stored into the database and it is all time share its data through the others nearest traffic signal. So all time one signal knowing others nearest signal situation.

The real time imaging system are continuously collect images that is also supported online monitoring and maintain traffic management, vehicle tracking and collect information.

It will make a good relation between traffic police and general people.

1.4 Background of the Project:

This management system will be control the traffic signal automatically following by imaging (situation based) system with time base (scheduling) system. Help the people to traveling or moving one place to another without traffic jam over road. The system included online traffic signal monitoring, vehicle tracking system and all of the information store into a central database for that any time tracing any one of vehicle. The traffic police or any police officer traces the vehicle which is involved into different types of crime. It is also helpful to our crime branch and they can also help to the general people frequently.

1.5 Methodology of the Project:

In this mechanism we use an automated traffic management system that is maintained the traffic signal following the time schedule intelligence by microcontroller. We generate an assembly language code including different time schedule in a day and it work as following that time schedule. It has also included an image processing system which collect image by CC Camera processed that and maintained real time situation. This is an intelligence technique so we need only one traffic police on each traffic signal only for monitor it and maintained any exception event

1.6 History of Traffic Police in Bangladesh:

The traffic police in Bangladesh have a history is a long ago. Bangladesh traffic police establish before 200 years and launching during the British colonial period

followed by the Pakistani era and the emergence of independent Bangladesh in 1971. During the rule of Muslim Sultanate in Bengal between 14th and 16th century AD, the police system underwent some changes. But it was during the subsequent Mughal reign that it entered a new phase through expansion.

Although there were no professional police force similar to the British during the Mughal era, an orderly force was in motion to maintain law and order throughout the land. Radical changes were brought about in this administration by the British colonial rulers through the police reform act of 1857. Then in 1857, the 'sepoy mutiny' view that the police administration was not very effective, then established a uniform and effective police administration in some provinces of Indian subcontinent including Bengal in line with the Royal Irish Constabulary system.

1.7 Existing Traffic Management System:

At present we have not any existing automated system. The traffic police maintain it manually given signal over his hand. They have not any existing data stored system. The traffic police maintain only showing his hand so we need many police in one signal. People violate traffic rules and some time they fetch complexity moment. It is the cause of accident and creates a traffic jam. If you go to a traffic point you saw that has traffic signal light but it is unused some time the traffic police avoid the traffic light and it is also maintained manually. Now this is a national problem of our country. Some traffic point has many CC Camera but that is disconnected or which connected that is only capture seen of accident.

1.8 Problem Finding:

Our existing system does not follow any automated system. It is following a situation based manual system. A traffic police control the traffic signal given signal up to his hand and that was needed huge number of traffic police for a traffic signal. Some they cannot take up the situation and occurred traffic jam and some time they fall in a complex situation (Fig: 1.1). The general people are fallen problem and they were loss there much valuable time on the way. For that they were mistake their work schedule.



Fig 1.1: Complex situation of traffic management system.

1.9 Benefit of the Project:

This automated project will reduce the traffic jam and also reduce the number of traffic police. It helps to the general people of our country to jam free moving on the street. It helps to our traffic police, elite force and crime branch to catch crime or involve vehicles.

The system also stores all the information that we needed to different time of various types of forces for different kinds of investigations.

Our country people will be most benefited with this project because traffic jam is a nation problem at present in our country. When it reduces the society people can move one to another with a jam free road. They can also maintain their work schedule frequently and given appropriate value of their valuable time.

1.10 Organization of the Report:

This project is organized in chapters. Chapter 2 presented Literature Review which is similar existing work in the world. In Chapter 3 Analysis Feasibility study and cost benefit analysis are also described. Chapter 4 provides the system design flowchart,

use case diagram, dataflow diagram. Implementation is presented in Chapter 5. Chapter 6 represented the conclusion and future work.

1.11 Conclusion:

Our country at present going to be digitalized but our traffic management system is not digitalized. Before some days it was maintained by a time based management system but at present it has not any existing automated system. Many of the time the traffic signal lights are totally stopped then it is maintained by traffic police manually. This is not fare for our country.

Chapter Two

Literature Review

2.1 Introduction:

Bangladesh is a beautiful country but it has many national problems. The traffic management problem is one of them. For that a large population loses their valuable time for the traffic jam. Recently we had an automated system does not exist. If we are reviewing any developed country in the world, they are completing many kinds of work but we cannot implement sufficient.

2.2 Existing Traffic Management System:

The research approach for this thesis can be divided in two major parts. The first part focuses on the design of a robust, flexible and saleable framework for online traffic management, while the second part deals with the development and integration of a prototype online simulator to the framework and the application to a test area. To meet the needs of developing a robust, flexible and saleable system, a multi-agent approach has been chosen. Several agents, performing the tasks of data collection, data handling and communication, are distributed in a computer network. This allows an easy scalability of the systems in terms of computation power. For flexibility, all incorporated parts of the system are strictly autonomous and modular based, so that they can be exchanged if necessary due to personal needs or interests, while the synchronization is handled by the framework. To ensure the robustness of the system it includes methods to recover from technical failures of the computer network, their provided DTMcycle design are given bellow (in Fig: 2.1): [1].

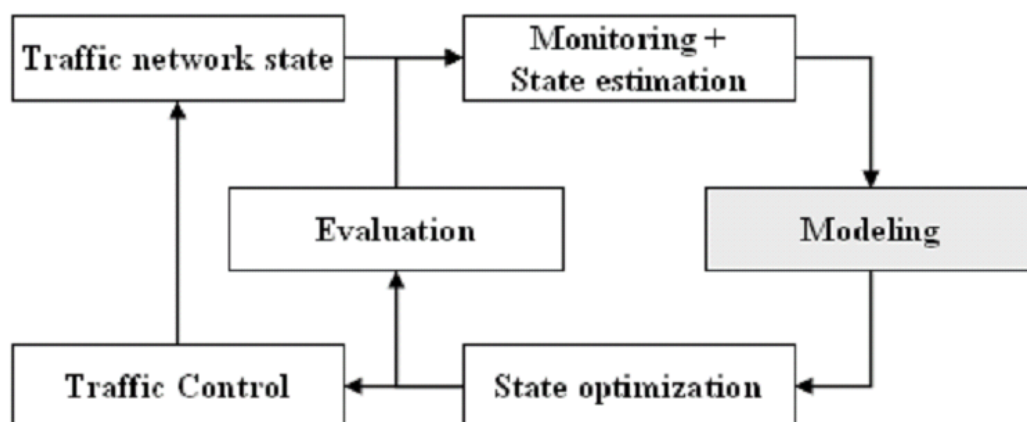


Fig 2.1: DTM Cycle for Optimizing Traffic Networks

They reviews this design six function traffic network state that is connected the entire traffic unit by network it is an intelligence automation system that control the traffic unit. It has one unit that monitor the all traffic unit and given state estimation. It has also entered modeling or state optimization and at last it evaluates the whole process and generates a final report.

This is technique that is used for the traffic light control based on image processing which measures the traffic density on the road and according to the traffic density measurements, it decides the cyclic time of the traffic light signals. They used a high quality camera into this intelligence system it may be overcome all of the traffic management problems architecture review (in Fig 2.2).

This technique following by many steps they are

1. Image acquisition, in which empty road and image with traffic on road is captured; empty road image is saved as a reference image.
2. RGB to gray conversion of both the images
3. Image enhancement

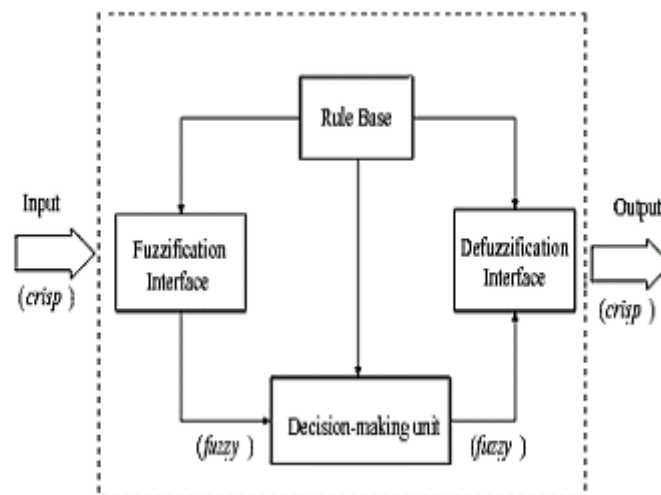


Fig 2.2: Basic Configuration of Fuzzy Logic System

- Image matching using Morphological edge detection which matches the edges of the reference image and the image with traffic on road. In addition to edges that are caused by vehicles there is also extra edges which is caused by undesired factors like damaged road or white marks on the road surface and shadow of trees and buildings.

To remove the effect, they differ the edges of background pictures from the edges of current pictures. After edge detection procedure both reference and real time images are matched and traffic lights can be controlled based on percentage of image matching. If the matching is

- Between 0 to 10% - green light is on for 90 seconds. If the matching is between 10 to 50% - green light is on for 60 seconds. If the matching is between 50 to 70% - green light is on for 30 seconds. If the matching is between 70 to 90% - green light is on for 20 seconds. If the matching is between 90 to 100% - red light is on for 60 seconds [2].

This domain of traffic management they has recently experienced a significant demand of advanced information technology. They control centers for traffic management are on-line connected to different devices (such as detectors on roads, cameras, traffic lights, etc.) making possible that operators supervise the state of the road by consulting data bases with recent information from detectors and modify the state of control devices. They uses of these traffic monitoring and management facilities requires sophisticated support tools for on-line operators, to help them in dealing with the information complexity and diversity of sensors and control devices (in Fig 2.3).

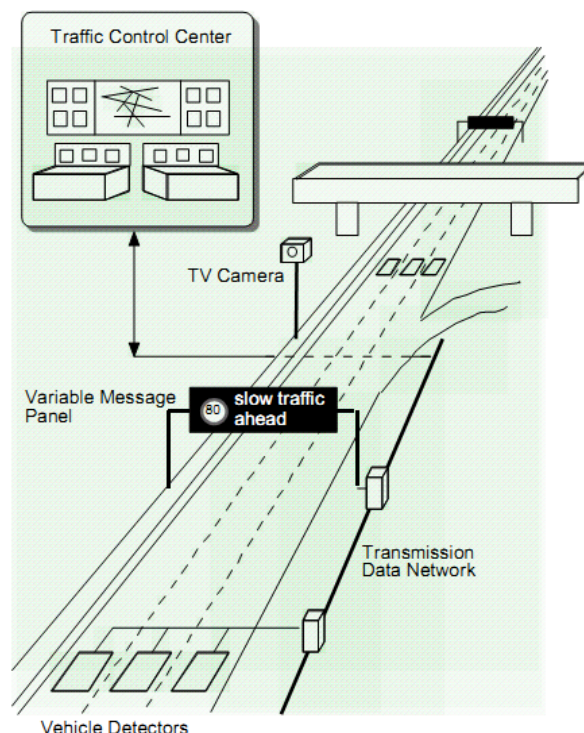


Fig 2.3: Typical Information Infrastructure for Real-Time Traffic Control.

The Figure 2.3 shows the typical information infrastructure for real-time traffic control that can be found in different cities. There are sensors (loop detectors) on major roads recording several traffic magnitudes such as speed (km/h), flow (vehicle/h) and occupancy (percentage of time the sensor is occupied by a vehicle). The distance between successive sensors on a freeway is usually about 500 meters. This information arrives periodically to the control centre (e.g., every minute). The control centre receives also information about the current state of control devices. Control devices include traffic signals at intersections, traffic signals at sideways entry-ramps, variable message signs (VMS) that can display different messages to drivers (e.g., warning about existing congestions or alternative path recommendation), radio advisory systems to broadcast messages to drivers, and reversible lanes (i.e., freeway lanes whose direction can be selected according to the current and expected traffic demand). In the control centre, operators interpret sensor data and detect the presence of problems and their possible causes. Problems are congested areas at certain locations caused by lack of capacity due to accidents, excess of demand (like rush hours), etc. In addition, operators determine control actions to solve or reduce the severity of existing problems. For instance, they can recommend increasing the duration of a phase (e.g., green time) at a traffic signal, or they may suggest displaying certain messages on some VMSs to divert traffic [3].

2.3 Conclusion:

They were work as an intelligence system with image processing. These papers already exist but we could no develop our traffic management system similarly. It may said to be a kind of weakness of our country management system.

Chapter Three

Analysis

3.1 Introduction:

Bangladesh is a small country but it has a large population. Most of the people are none educated. Anyone cannot be able analysis the situation of next generation or any kind of real time situation. In this situation, the traffic management problem of our country is a big challenge. Anyone is not to be thinking on this topic. So we cannot solve our problem properly.

3.2 Feasibility Study:

At present some places of our country are used automatic traffic management system and some manual system. The automatic system is worked as only time based. After fixed time it changed the direction of road. So we cannot called, it is an intelligent system. Because of it cannot analyze the real time situation and we need many number of traffic police to control one traffic signal. Sometime we saw that the traffic signal light is avoid by the traffic police, because it cannot be able to maintain the situation by them. It cannot be a better solution for traffic management system. It is also fallen technical problem of our traffic management system.



Fig 3.1: Existing Traffic Light Management System.

Fig 3.1 reviews the existing traffic management system. Here all the traffic signals are turned off and the vehicles are run.

Our proposed system is a machine based system which can controlled the whole process following by two systems. One is real time situation based which is worked by image processing system and another is time based system. Each traffic signal has a computer and a traffic police monitor the overall situation of this traffic signal and it has also some close circuit camera (CC Camera) that collect image continuously processing by the machine (computer) and control the situation smoothly. On the other hand, when the traffic signal will be free then it controlled by time based system. For that we would reduce the number of traffic police and also reduce the traffic jam.

It is feasible for our country because it is worked by situation and also time based system, it can reduce the number of traffic police in a traffic signal, so it is also reduce the traffic cost and help to our economics.

3.3 Requirement Analysis:

We need for our proposed system a machine (Computer) for each traffic signal because of the system is a machine based intelligent system, some CC Camera for each traffic signal, one server machine for making a central server.

The computer controls the whole traffic management system and communicates with the central server. It cans also processing which collect by CC Camera and send the processed information to the central server. The server stored this information on the database and share with others traffic signal.

We have also need a circuit board that is interfaced into the CC Camera and the computer and also interfaced between the traffic signal light and the computer. The server machine collects information from each traffic signal and stored into the central database and also shares with others traffic signals.

3.4 Costs Benefit Analysis:

The cost of the intelligences traffic automation system we can divide into two parts that is

1. Software part
2. Hardware part

At first we want to develop these two sides and then we can implement it with our previous system.

3.4.1 Software Development Cost:

We decided that a senior programmers salary is 30,000/- a programmers salary is 20,000/- , and a junior programmers salary is 12,000/- the cost is continually due to after 6 months.

- Want to be 6 month for developed this project.
- We will need 3 programmer for this process
 - System Analyst (Salary 40,000/-)
 - Senior programmer (salary 30,000/-)
 - Programmer (salary 20,000/-)
 - Junior/intern programmer (salary 12,000/-)

Total salary $(40,000+30,000+20,000+12,000) = 1,02,000 \times 6 = 6, 12,000/-$

On the others cost we included the cost of house rent cost, communication cost to the customer (company), services charge of the software for 6 months to the software making period .

- Others cost (including house rent, communication, services charge etc)
 - 3,00,000/-

In Bangladesh prospects the traffic control automated systems total cost is estimated approximately, the total cost of salary of the employee on the processing period with others cost of that time including house rent, office management cost, electricity, accounts management costs etc.

- we need total cost for developed this project

$$- \text{Total cost} = (6,12,000 + 4,50,000)$$

$$= 10,62,000/-$$

$$= 11,00,000/- \text{ (approximately)}$$

3.4.2 Hardware Development cost:

In hardware development side we need a server machine for making central server information gathering system, CC Camera for getting snaps on the sports and processing management instruments etc.

- Server cost = 1,50,000/-
- CC Camera cost = 1,00,000/-
- Others instrument cost = 1,00,000/-
- Management cost = 1,50,000/-

Total cost = $(1,50,000 + 1,00,000 + 1,00,000 + 1,50,000 = 5,00,000/-)$ Approximately.

So we need total development cost is $(11,00,000 + 5,00,000 = 16,00,000/-)$ approximately.

At last we can say that, these amount is not so big because this systems longevity is not a short time, this will be continue a long & long time.

Others side our prospect system will be reduce the number of traffic police and also reduce the traffic jam so it cannot be cost affected rather that we are for implementing this system.

3.5 Field Work:

We went various places in Dhaka Bangladesh and counting vehicle different time slot in a day and we collect some data. At first we divide the vehicle into three types that is car, bus, CNG and also divide five time slots of a day.

We count vehicle five times in a day that is 9:30 A.M to 10:00A.M and 5:00P.M to 5:30P.M are busy time because this is office time of our country. All of the employee are coming office and go back to the home in this two time slots.

We are overview here the data of Bejoy Sarony (Fig 3.1 and Table 3.1) and Rasel Squire (Fig3.2 and Table 3.2) of Dhaka Bangladesh.

Time	Rakia saroni	Chondrima uddan	Khamar bari	Army museum
9:30-10:00 AM	CNG –225 BUS –57 CAR –540	CNG –89 BUS – CAR –84	CNG –246 BUS –87 CAR –771	CNG –390 BUS –135 CAR –630
11:00–11:30 AM	CNG –243 BUS –84 CAR –570	CNG –96 BUS – CAR –276	CNG –162 BUS –57 CAR –477	CNG –471 BUS –51 CAR –720
12:00-12:30 PM	CNG –228 BUS –72 CAR –588	CNG –195 BUS – CAR –219	CNG –387 BUS –135 CAR –54	CNG –393 BUS –27 CAR –504
02:00-02:30 PM	CNG –180 BUS –60 CAR –543	CNG –162 BUS – CAR –180	CNG –96 BUS –24 CAR –408	CNG –552 BUS –42 CAR –438
05:00-05:30 PM	CNG –232 BUS –61 CAR –556	CNG –93 BUS – CAR –91	CNG –277 BUS –103 CAR –682	CNG –414 BUS –127 CAR –639

Table 3.1: The Data Table of Bejoy Sarony.

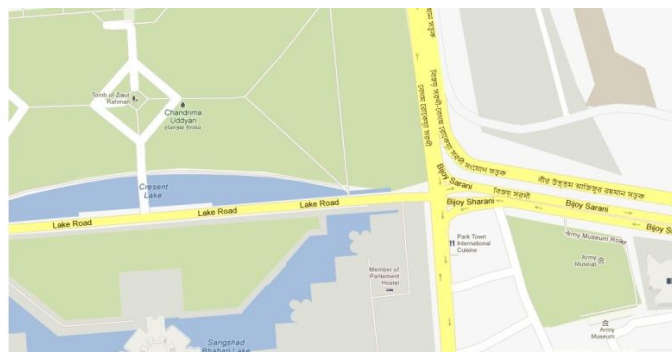


Fig 3.1: Map of Bejoy Sarony.

Time	Pantho Path	Kola Bagan	Sukra Bad
9:30-10:00 AM	CNG –150 BUS –18 CAR –552	CNG –96 BUS –114 CAR –840	CNG –90 BUS –192 CAR –648
11:00–11:30AM	CNG –180 BUS –18 CAR –516	CNG –84 BUS –144 CAR –1170	CNG –150 BUS –120 CAR –720
12:00-12:30 PM	CNG –228 BUS –24 CAR –792	CNG –108 BUS –162 CAR –1128	CNG –204 BUS –60 CAR –984
02:00-02:30 PM	CNG –90 BUS –6 CAR –342	CNG –102 BUS –82 CAR –528	CNG –162 BUS –78 CAR –520
05:00-05:30 PM	CNG –184 BUS –21 CAR –820	CNG –117 BUS –153 CAR –1190	CNG –192 BUS –150 CAR –966

Table 3.2: The Data Table of Rasel Squere.



Fig 3.2: Map on Rasel Square.

3.6 Conclusion:

The Bangladesh develops their sectors but we cannot develop our traffic management system. Now we want a better solution in this sector. We wish our prospect system is giving a permanent for this problem. Every year we invested a large amount of cost (traffic police salary or others opportunity purpose and others maintaining costs) rather that our costs is so poor and it establish for a long time. At last we can say that, our prospect system is feasible for our country.

Caper Four

Design

4.1 Introduction:

Our prospect system is an accepted system because we use real time image processing and intelligence time based technique into this system. We apply various method and that causes the system is to be flexible but it is not a common system it is an intelligence system and more valuable when it is work properly in our environment.

4.2 Uses Design Tools:

To make this design we use rational rose 98 and Microsoft Visio 2007 and we made the code of microcontroller by using assembly language.

4.3 Flowchart:

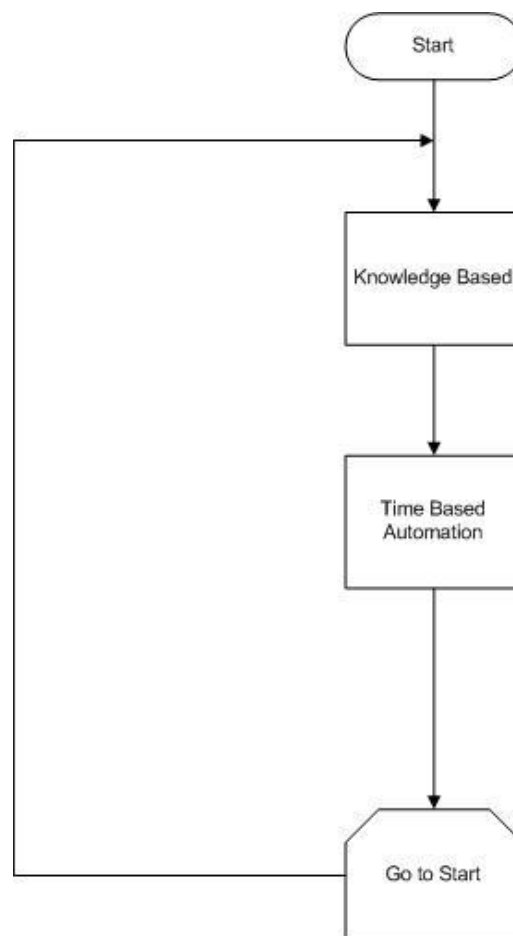


Fig 4.2: Flowchart for Knowledge Based Traffic System

In this traffic management knowledge based traffic management system (Fig: 4.1) we store some condition or knowledge into the system and the system maintain it by following that knowledge.

Flow chart is essential for any kinds of system because it reviews the overall system method, techniques and function with a symbolic diagram.

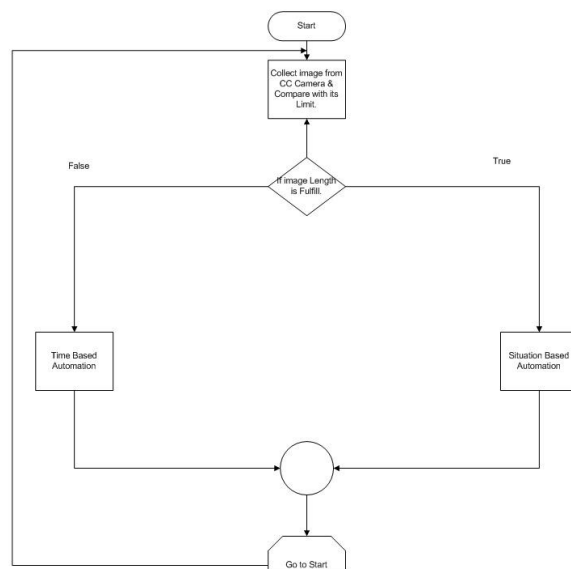


Fig 4.1: Flow Chart for Proposed Traffic Management System.

When the system start ‘on’ at first it will be collected images by CC Camera and check validate length when the length is fulfill it follows image processing method and control by real time situation based system. Other side when the condition is not fulfilling the system is handled by time based method which is controlled the system changing signal based on a fixed time.

4.4 Data Flow Diagram:

Our proposed system following microcontroller based time scheduling system and it has another image processing system which maintained by real time situation. It has four processes controller machine like computer which control the whole process, traffic signal controller that is intelligence controlled the traffic signal, a storage process which store information into central data base and share this collecting information with others traffic signal.

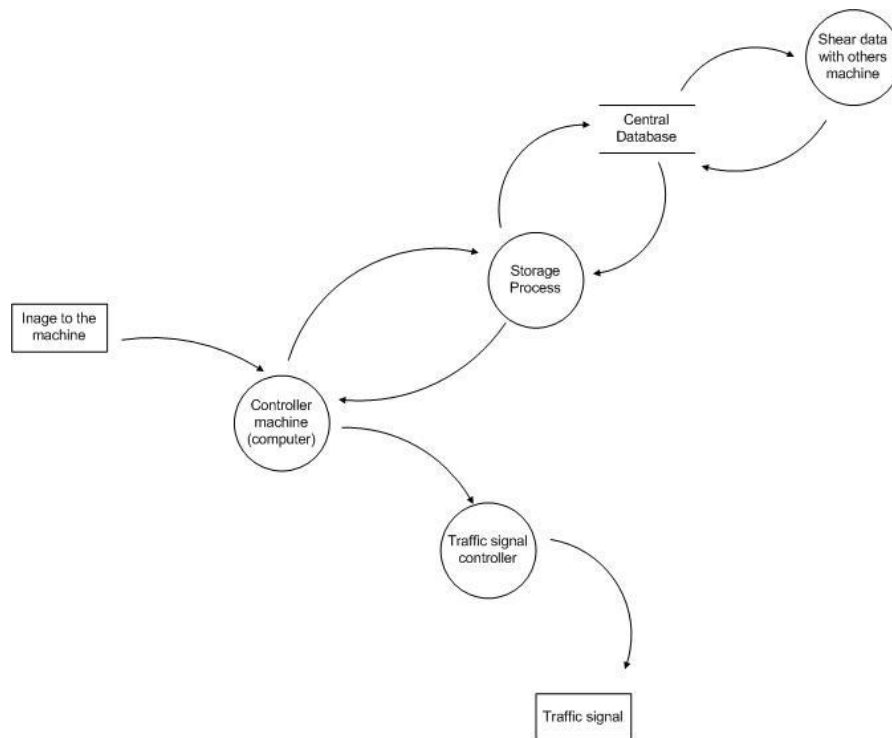


Fig 4.2: Data Flow Diagram for Time Base Traffic Control System.

4.5 Use Case Diagram:

We divided the whole process into three parts they are –

1. Two way road.
2. Three way road.
3. Four way road.

4.5.1 Two crossing road:

The Two crossing Roads will have always opened and it has a traffic police (If it is VIP road) who control the exception event (like when any VIP person will be gone or any complex moment of the traffic) Fig: 4.3.

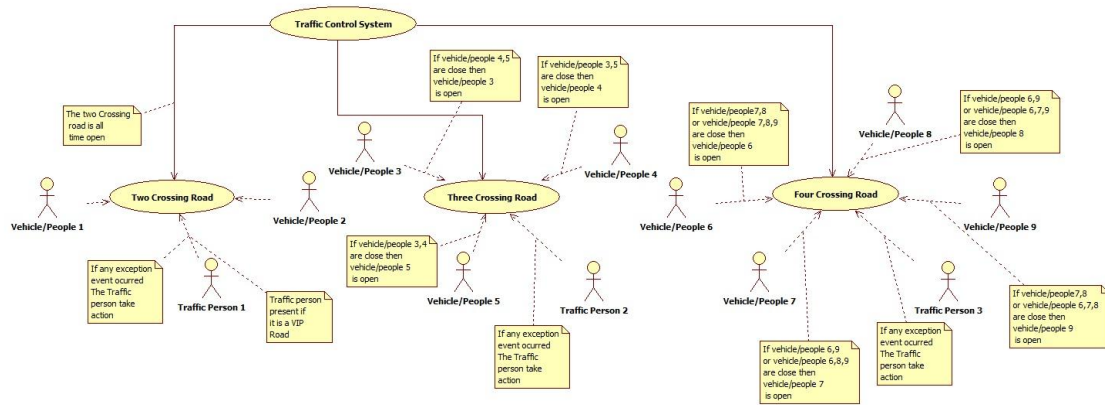


Fig 4.3: Use Case Diagram of Traffic Control System.

4.5.2 Three crossing road:

The Three Crossing Road will control with automation system following by the time based schedule. It has also a traffic police who control the exception situation (Fig: 4.3).

4.5.3 Four crossing road:

The Four Crossing Road will also be controlled with an automation system following by the time based schedule. It has also a traffic police who control the exception situation (Fig: 4.3).

4.6 Conclusion:

Implement that properly we are must be able to develop our traffic management system. We can also reduce using number of traffic police and reduce the traffic jam.

Chapter Five

Implementation

5.1 Introduction:

Before implement we have to analyze, feasibility study, cost benefit analysis and we saw that our system is feasible for our country perspective. Then we completed our designing and try to implementing. At first we made a simulation model then we try to making a hardware implementation tools.

5.2 Simulating Tools:

We use C graphics coding for make this simulation model and compile by Turbo C compiler.

5.3 Simulation Model of Traffic Management System:

We have completed to make a simulation model. This is worked by following a time scheduling and controlled by a four crossing road.

At first we draw a model of road that is running to four sides and each side has one signal post that has three signals light that indicated when the road is closed and when are open (Fig: 5.1).

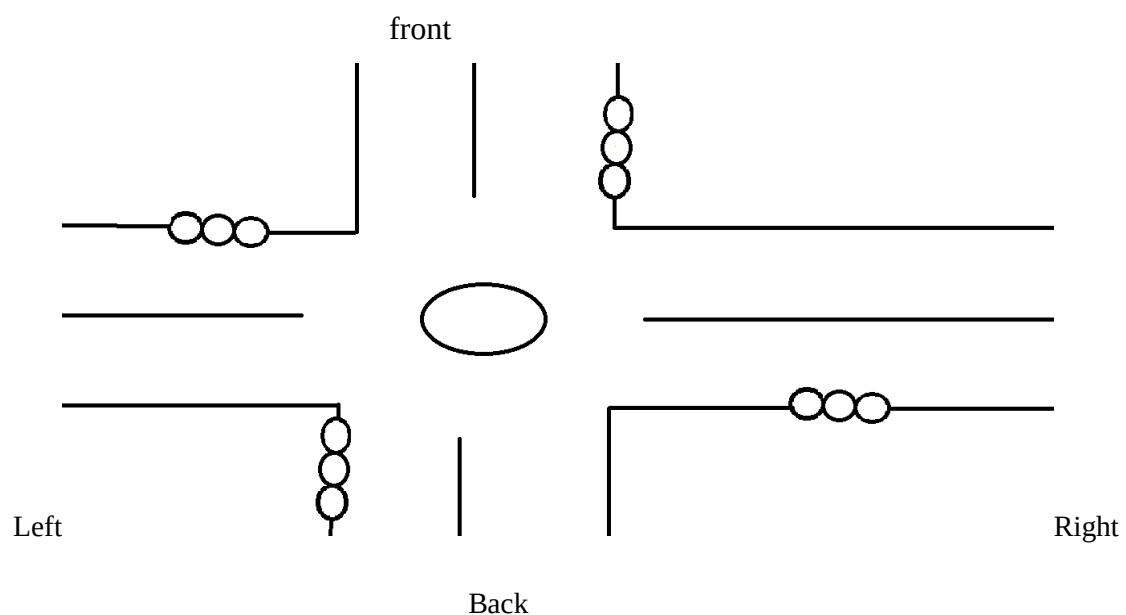


Fig 5.1: Simulation -1

now when front and back side road light are red then time this two road are closed and others two roads are open the red light into the circle indicated this road are also closed. The arrows are indicated which side the vehicles are run or open and which are close (Fig:5.2). This system is automotive system which works in time based.

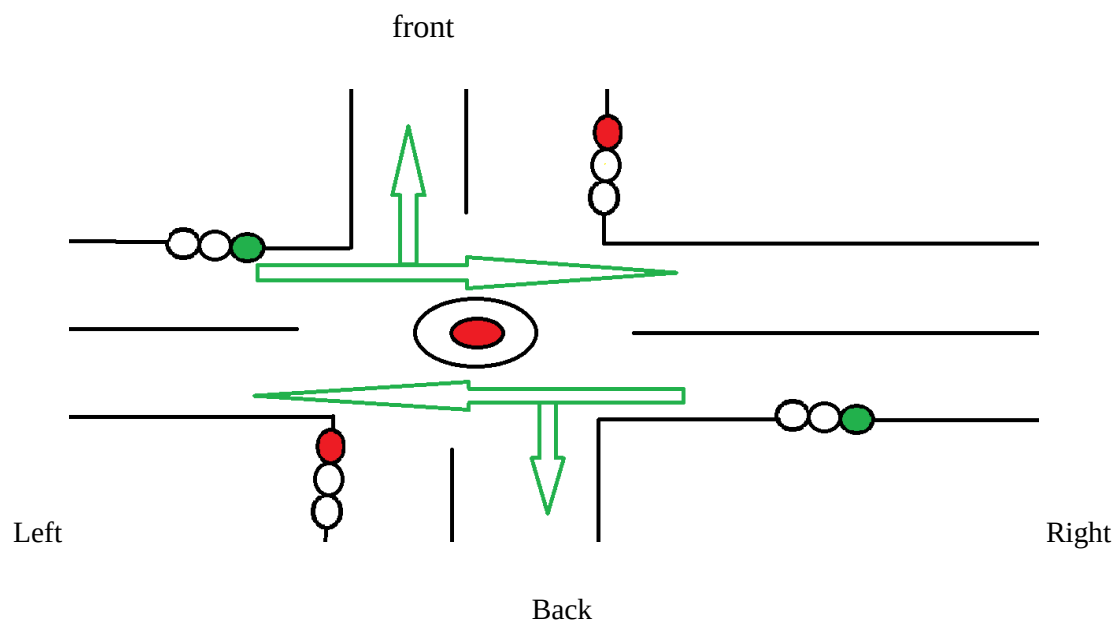


Fig 5.2: Simulation -2

In this above figure the vehicle run left to right and left to front, the others side the vehicle run from right to left and left to back side.

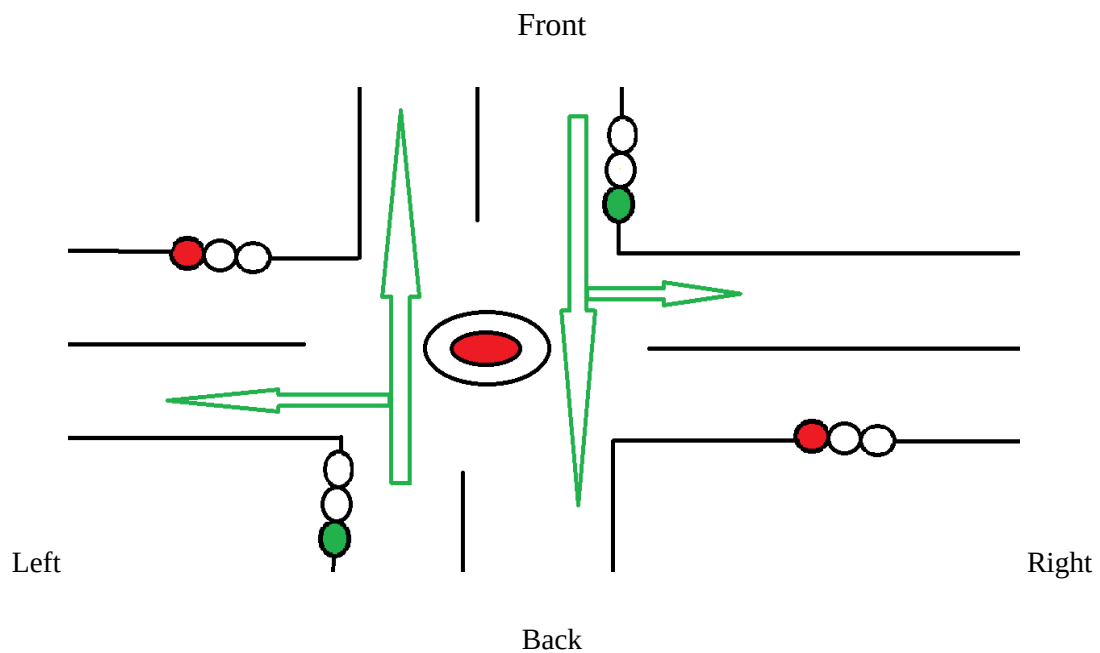


Fig 5.3: Simulation -3

After above (Fig: 5.3) this figure the vehicle run from front to back and front to right side, on the others side the vehicle run from back to front and back to left side. The arrows are indicated that's vehicle path.

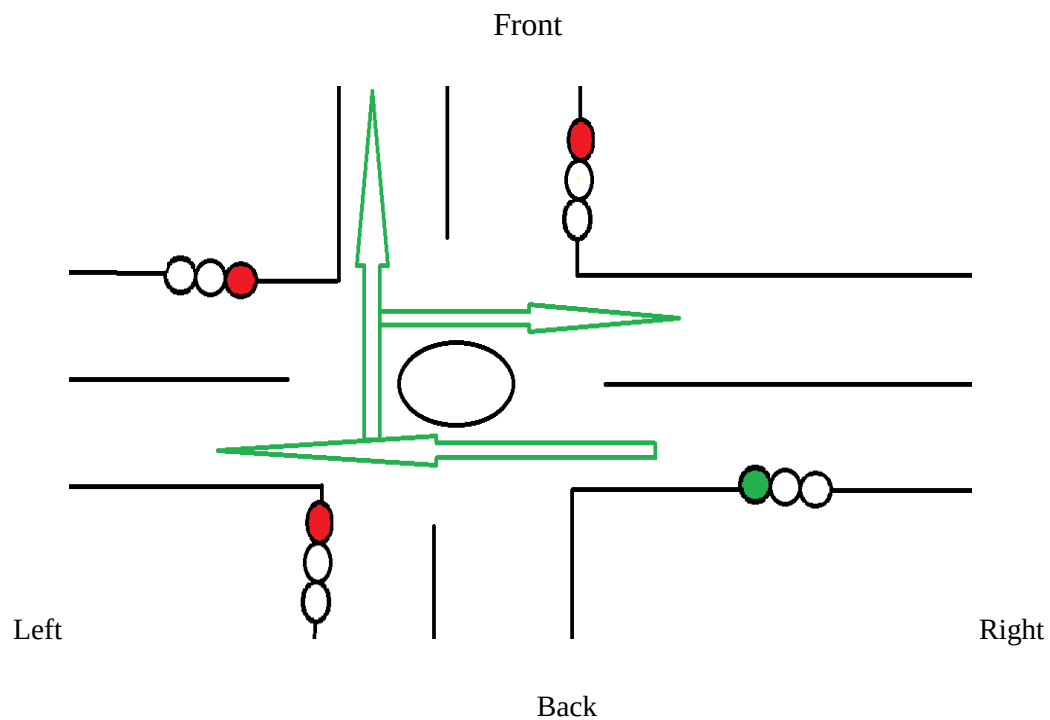


Fig 5.4: Simulation -4

In this above figure (Fig: 5.4). when three side's signals light are red that means when three roads are close how to control this system? When three road left, right and front has red signal then the vehicle run from right left ,right to front , right to back and right to right.

The next picture (Fig: 5.5). we see when only one back side road is open then the vehicle run from back to left, back to right, back to front ,back to back side.

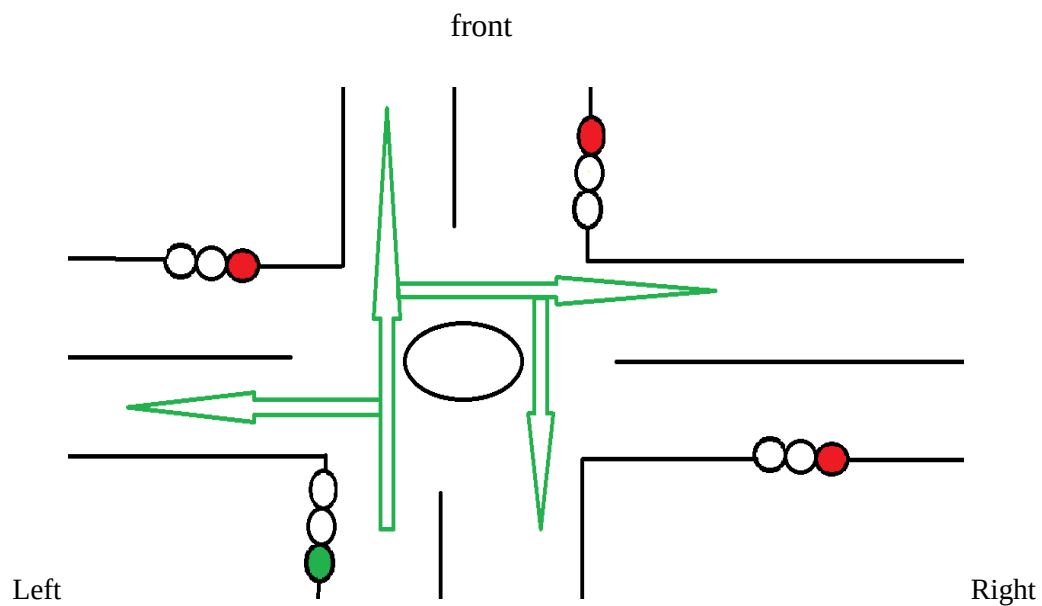


Fig 5.5: Simulation -5

In the next figure the vehicle goes from left to right, from left to front ,left to back and left to left.

The arrow are indicated the running side of this model.

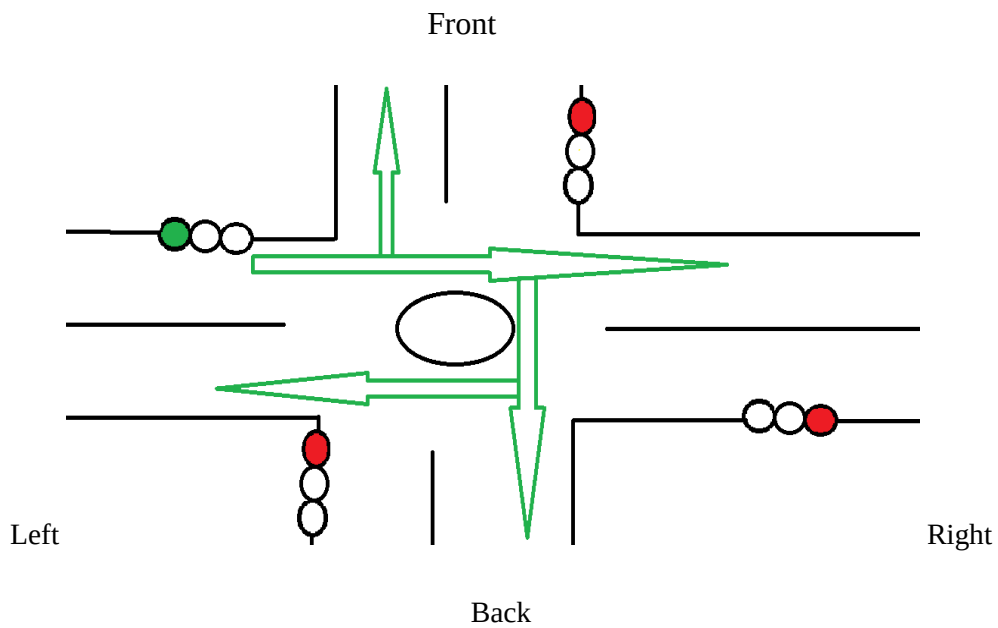


Fig 5.6: Simulation -6

The next figure we see the vehicle goes from left to right, left to front, left to left and left to back side. Where the arrow are indicated the entire vehicle running side and this model is fully automated and work one after another step individually (Fig: 5.6).

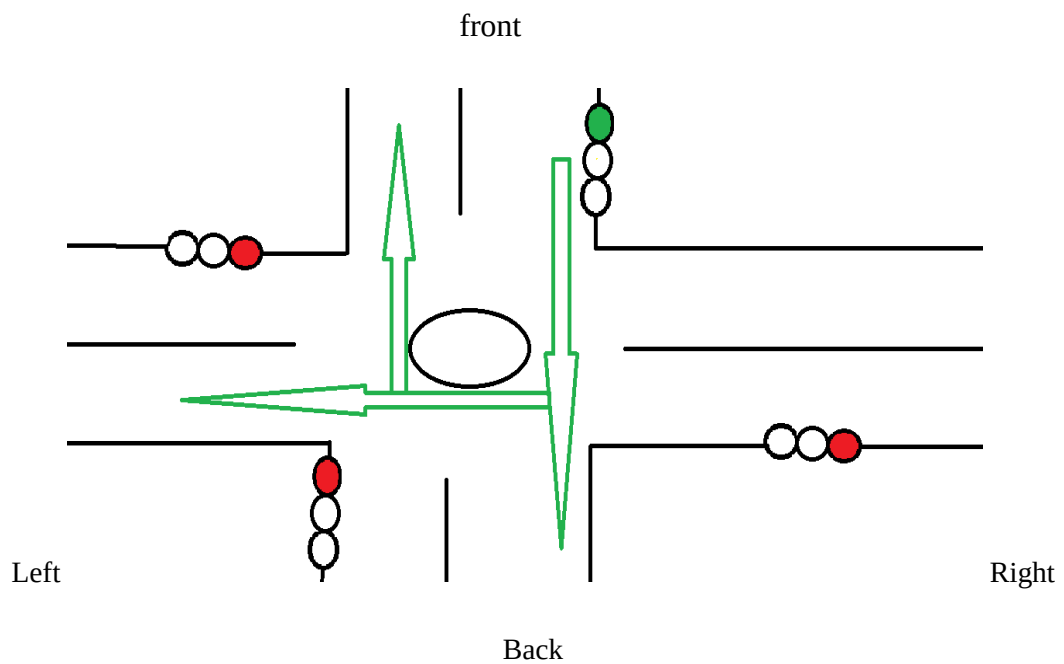


Fig 5.7: Simulation -7

This simulation model work on time base automated system that changes its signal individually one after another and after 6min the road closed only 1min. each road follow this procedure continuously (Fig: 5.7).

5.4 Uses Microcontroller Tools:

We tools using for making simulation model in turbo C and circuit design into proteus 7.10v to generating code for microcontroller in AVR studio 4.0v Microcontroller ATMEGA32.

5.5 Microcontroller:

A **microcontroller** is a cheap or small computer on a single integrated circuit containing a processor core, memory, and programmable input/output peripherals. Program memory in the form of NOR flash or OTP ROM is also often included on chip, as well as a typically small amount of RAM. Microcontrollers are designed for embedded applications, in contrast to the microprocessors used in personal computers or other general purpose applications [4].

5.6 ATMEGA 32 Microcontrollers:

The ATmega323 is a low-power CMOS 8-bit microcontroller based on the AVR Enhanced RISC architecture. By executing powerful instructions in a single clock cycle, the ATmega323 achieves throughputs approaching 1 MIPS per MHz allowing the sys-tem designer to optimize power consumption versus processing speed [5]. (Fig: 5.8)



Fig 5.8:ATMEGA32 microcontroller.

ATMEGA32 is 8-bit AVR Microcontroller. It has total 40 pins and four input/output ports that mean 32 I/O pins, one VCC, AVCC, Reset and two GND pin are also exist (Fig:5.9).

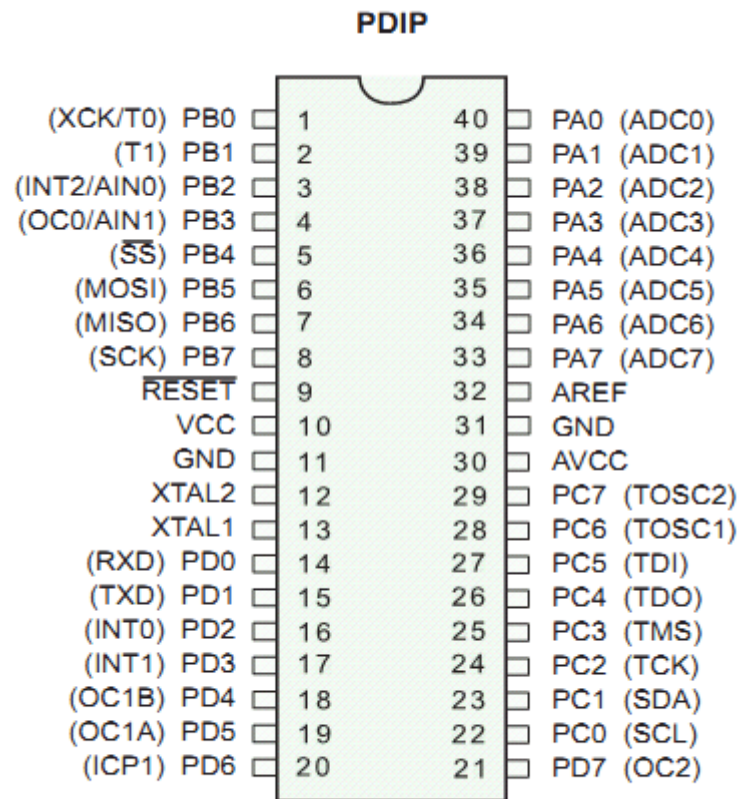


Fig 5.9:ATMEGA32 microcontroller in Configuration.

5.7 Microcontroller Based Traffic Management System:

In this part we have used microcontroller ATMEGA-32 make a circuit design that has four set of traffic signal and 3 signal light (such as red, green, yellow) has each of the set. It is a time based automation system. It controlled one after another signal automatically.

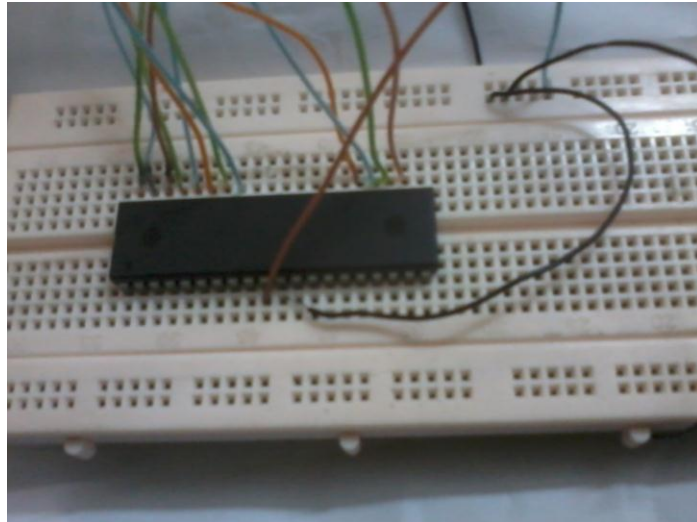


Fig 5.11: Bread Board Interfacing.

5.9 Model Diagram:

The model has four crossing road that we control by knowledge based intelligence circuit (Fig: 5.12).



Fig 5.12: Diagram of a Model Traffic Management System.

5.10 Comparisons between Existing System and Proposed System:

Existing traffic management system and our proposed are far difference that are given bellow-

Subject	Existing traffic management sys	Proposed traffic management sys
1. Operation mode	At present we have on any existing automated system before some days one time based automated system is exist but it cannot handled the traffic signal point properly so it controlled manually by traffic police.	Our proposed system is automatically handling the traffic signal point properly and it will include time based automated system with image processing and it operate automatically.
2. Information management system	Existing system does not have any information or data management system.	Proposed system has central server system that is collect and manages all the information.
3. Benefit or losses	We use many number of traffic police of each traffic point, occurred more traffic jam, some time create a complex situation and people losses their valuable time.	This system reduce the number of traffic police, also reduce the traffic jam, store information, vehicle tracking, online traffic monitoring are including.
4. System properties	Uses time based automation system or manually handled by traffic police.	Uses time based and real time situation based intelligence system handled automatically.
5. Maintaining costs	Needed to high maintaining cost.	Needed to low maintaining cost.

Table 5.1: Comparison between Existing System and Proposed System.

5.11 Conclusion:

Our prospect work we proposed two part of work but at present we are able to do one part. It was worked properly and controlled automatically traffic signal maintained by time schedule.

Chapter Six

Conclusion and Future Work

6.1 Conclusion:

It is very essential to solve out traffic management problem. Because each time of our life and every movement we move into tie traffic signal and some time it is a big issue for losing our value able time. Our nearest many country many country follow many kinds of automation system where as we have not any existing automated system. Now this issue is a common phenomena and it is also a national problem of our country.

6.2 Prospect Work:

We proposed a traffic model we used into some cc camera which collects snap continuously and send it to the police box controller machine. Controller machine process that images control traffic signal and also send information to the central database.

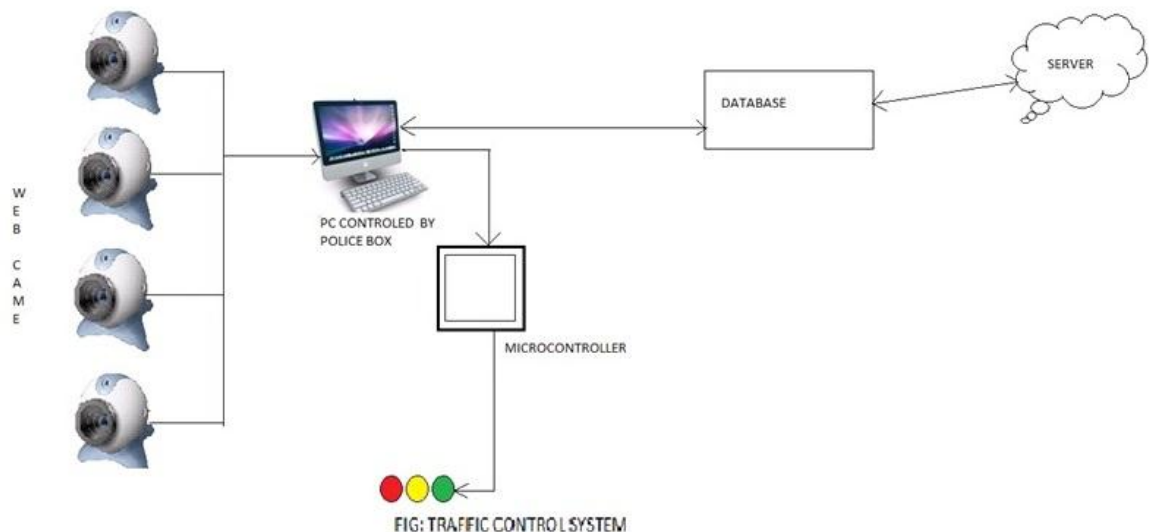


Fig 6.1: Proposed traffic management system model.

These store information into the central database. These databases share this information to connect with others traffic signal. It is also send its information to the central database through the network. So that, all the traffic signals known the real time situation of each the traffic point. It will also included a vehicle tracking system which is trace the vehicle recognize the number plate.

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