



SMART INDIA HACKATHON 2022

Ministry / Organization Name / Student Innovation:

State Ministry / Cyber Crime Unit, Special Cell, Delhi Police, MHA

PS Code: *RV1258*

Problem Statement Title:

Secure wireless controller for hand-held remote operation of Traffic signals in peak hours

Team Name: *Super 6*

Team Leader Name: *Darshan Shivsingh Patel*

Institute Code (AISHE): *C-1439*

Institute Name: *Gogte Institute of Technology, BELGAUM*

Theme Name: *Cyber Security*

Idea/Approach Details

The idea is to implement a secure ecosystem capable of handling traffic control automatically and manually.

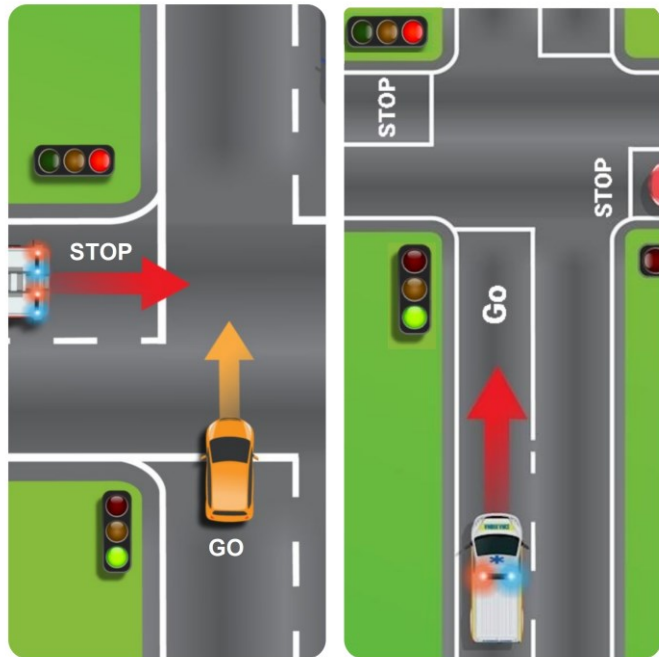
As a solution, we developed this project.

The system is a single package solution for traffic management system

Technology Stack:

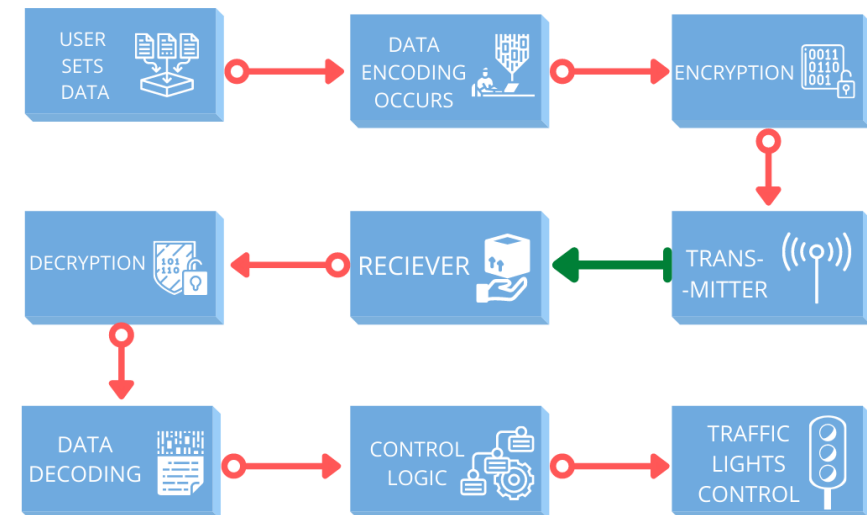
- Hardware:
 - XBees
 - Arduino Boards
 - Switches
 - Display LCD
 - Custom Circuit boards
- Software:
 - Arduino IDE
 - XCTU for Zigbee
 - Visual Studio Code
 - Programming Languages – C++
 - Application Development - Java

- ❖ The system contains a wireless network device for creating its own private network.
- ❖ It comes with a controller that is easy to install on traffic junctions.
- ❖ Once installed, they join the network automatically.
- ❖ This process is encrypted using an Advanced Encryption Standard (AES) technique.
- ❖ The system also has a secondary encryption program to ensure security is maintained.
- ❖ A handheld remote can be used to manually control the traffic.
- ❖ System has several safety and failback facilities.








Current Situation | After project use

Block Diagram



Features/Use Case Details

Some of the notable features are:

-  AES 128bit encryption along with secondary encryption.
-  Low power consumption.
-  Low development and implementation time and cost.
-  Completely wireless connectivity.
-  Simple to use and install.

Among many, some of the applications are as listed:



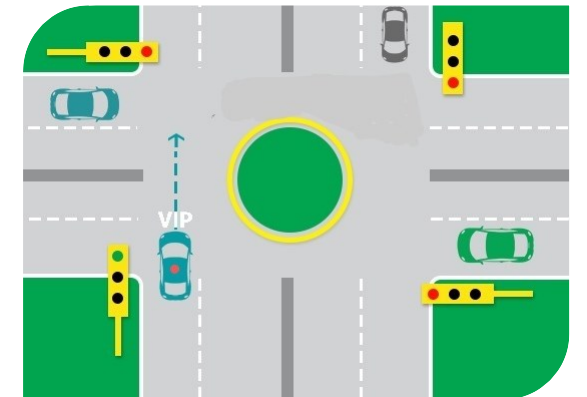
Emergency Vehicle Clearance



Rush Hour Traffic Management



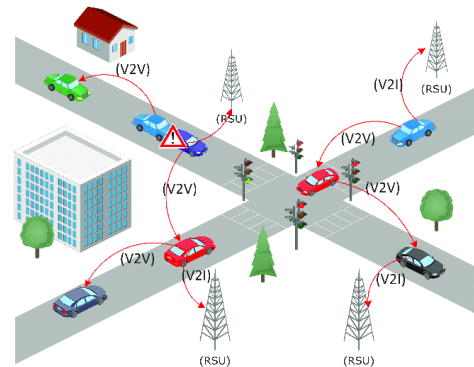
Traffic Re-Routing



VIP Route Traffic Clearance

Future Applications:

- ❖ Smart Vehicle Technology.
- ❖ Smart Traffic Control.
- ❖ Accident Risk Management Systems.
- ❖ Autonomous Vehicle Systems.
- ❖ Smart Navigation Systems.
- ❖ Traffic Data Analysis.
- ❖ Road Safety Management Systems.



Team Member Details

Team Leader Name: Darshan Shivsingh Patel

Branch: Bachelor's of Engineering (BE)

Stream: ECE

Year : III

Team Member 1 Name: Akshaykumar B Hiremath

Branch: Bachelor's of Engineering (BE)

Stream: ECE

Year : III

Team Member 2 Name: Chelsi. S. Jain

Branch: Bachelor's of Engineering (BE)

Stream: ECE

Year : III

Team Member 3 Name: Komal D. Latukar

Branch: Bachelor's of Engineering (BE)

Stream: ECE

Year : III

Team Member 4 Name: Shivani S. Pujeri

Branch: Bachelor's of Engineering (BE)

Stream: ECE

Year : III

Team Member 5 Name: Snehal. S. Kanbargi

Branch: Bachelor's of Engineering (BE)

Stream: ECE

Year : III

Team Mentor 1 Name: Praveen U. Kalkundri

Category : Academic

Expertise : Embedded System Design

Domain Experience: 9+

Team Mentor 2 Name: Dr. Veena Desai

Category : Academic

Expertise : Cryptography & Network Security

Domain Experience: 30+