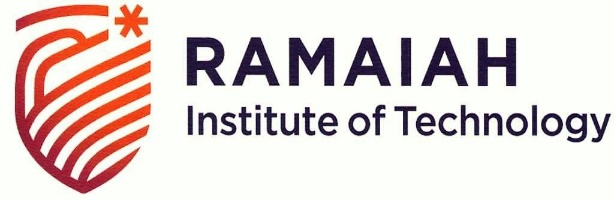
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**SYNOPSIS ON**

**SmartFlow: Integrated Emergency Vehicle Detection and Traffic Rule Monitoring System**

Submitted to the

Department of Master of Computer Applications

in partial fulfilment of the requirements

for the Mini Project (MCAP1)

**by**

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**1.Title**

SmartFlow: Integrated Emergency Vehicle Detection and Traffic Rule Monitoring System

**2.Project Overview**

SmartFlow is an innovative system designed to enhance road safety and traffic management by combining advanced technologies for emergency vehicle detection and real-time traffic rule monitoring. The project addresses the critical need for efficient emergency response and improved adherence to traffic regulations. Through the integration of cutting-edge sensors, computer vision, and artificial intelligence, SmartFlow aims to create a smarter and safer traffic environment.

**2.1 Introduction**

The proposed system utilizes the sensor data, communication and automated algorithms is to be developed to keep traffic flowing more smoothly. The aim is to optimally control the duration of green or red light for a specific traffic light at an intersection. When traffic is heavy in one direction, the green lights should stay on longer. The traffic light system has also been given an emergency mode, which gives ambulances priority to pass through traffic lights. And it is impotent to implement the Traffic Rule Violation Monitoring System because Road accidents are the ninth leading cause of death globally with over 12 lakh people dying on the roads each year across the globe. One of the major reasons for this would be traffic rule violations. And sending emergency alert through voice control system when driver is not well or facing some health issue in order to save the life of driver.

**Objectives :**

* The traffic light system has also been given an emergency mode, which gives ambulances priority to pass through traffic lights.[2].
* Monitoring the vehicles who violate the traffic rules so that number of road accidents reduces and save many lives [3].
* By utilizing Li-Fi through streetlights, this system aims to provide drivers with an easy and reliable means of navigation, enhancing safety and convenience [4].
* A performance profile of drivers, is created and updated, will be based on physiological measurements collected in real-time from existing non-intrusive devices in the vehicles, during the operation on a certain service route [5].

**2.2 Scope**

* Target Audirnce involves Traffic Management Authorities, Law Enforcement Agenesis, Emergency Services.
* Platform supported includes Traffic Signal Integration, IoT and Sensor Integration, Mobile Applications, Cloud-Based Infrastructure.

**2.2 Features**

Congestion control, Emergency vehicle Detection, Traffic rule violation monitoring system, Healthcare monitoring system

**3. Project Architecture**

**3.1 System component**

* Arduino MEGA
* Ultrasonic sensors
* Traffic LED’s
* LDR
* RFID Tages

**3.2 Technologies Used**

* Arduino Integrated Development Environment (IDE) and its Libraries.

**3.2 Design Diagram:**

**Smart Flow**

**Healthcare monitoring system**

**Emergency vehicle Detection**

**Navigation Using Li-Fi**

**Traffic rule violation monitoring system**

**Congestion Control**

**4.Functionalities**

* Congestion Control
* Emergency vehicle Detection
* Navigation Using Li-Fi
* Traffic rule violation monitoring system
* Voice Controlled Emergency Alert System

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