RAJEEV INSTITUTE OF TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Project Phase 2 Presentation on

"Advanced Traffic Management System Using Google Cloud"

PRESENTING BY

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UNDER THE GUIDENCE OF

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CONTENTS

ABSTRACT

- The major goal of the project is to make traffic management system work dynamically using Internet of Things, Infrared sensor in order to make traffic system work efficiently.
- Our project plan to provide an automated IR-sense based solution that makes traffic signals to shift the lights (red / green) dynamically.
- The Raspberry Pi controller works as a central console, it determines which sideways of the road signal is to get open or close.
- The central console gathers all the data from sensors and stores it in the cloud which intimates traffic status to a mobile device.
- Provide way to ambulance.

INTRODUCTION

Advanced Traffic Management system is an integrated solution to manage highway traffic through real-time information collection, processing, analysis, and finally dissemination to the users, concerned agencies, and stakeholders.

To ensure round the clock safety, it is of prime importance to provide real-time and precise information to users about the road condition, traffic situations, incidents, and weather conditions on the roadway. It is also important to make interventions for smooth, safe, and efficient traffic movement by providing rescue and relief to the users to avoid distress.

INTRODUCTION

Existing System

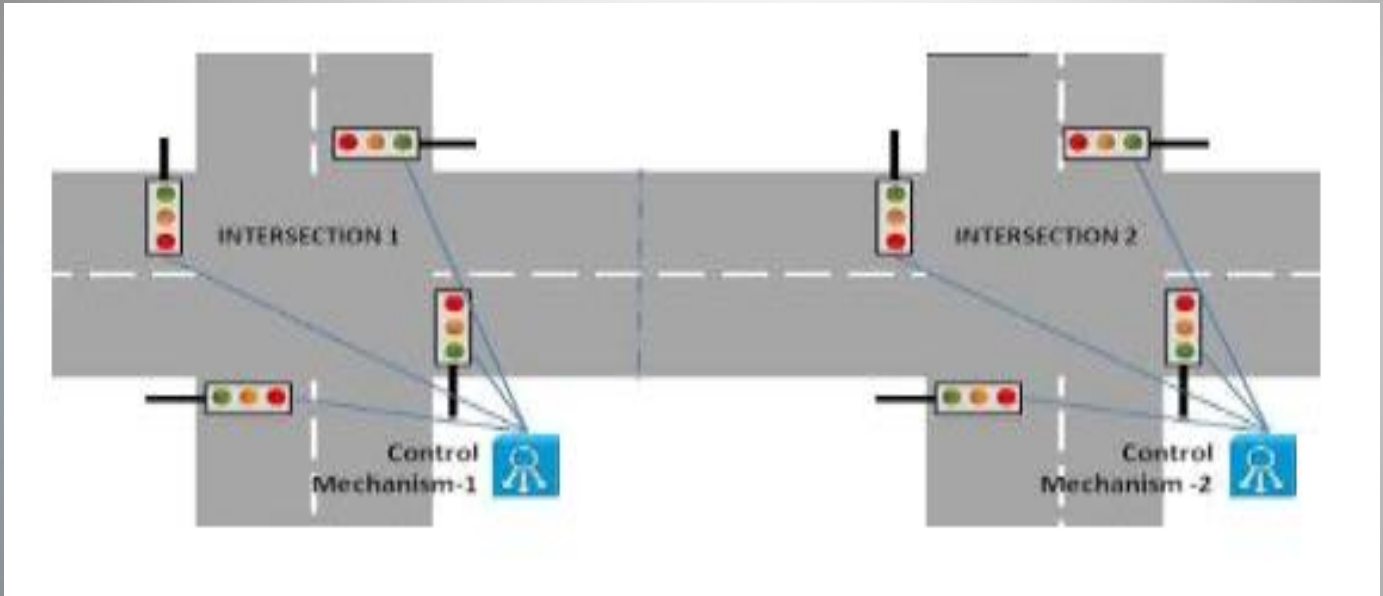


Fig : Block diagram of existing traffic control system.

Proposed System

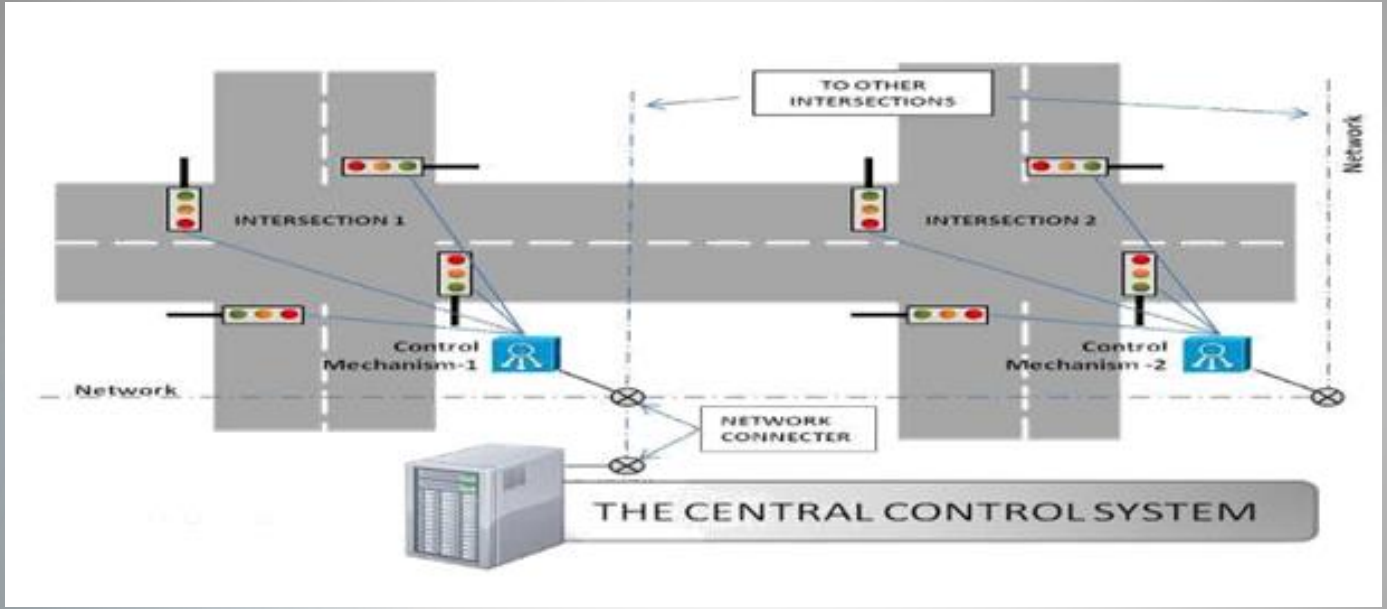


Fig : Block diagram of proposed traffic control system.

LITERATURE REVIEW

- Traffic congestion is a temporal condition on networks that occurs as utility increases, and is characterized by slower speeds, longer trip times, and increased queuing.
- When vehicles are fully stopped for the period of time, this is colloquially known as a traffic jam.

- EXISTING STUDIES ON RISK PARAMETERS.
- GEOGRAPHIC INFORMATION SYSTEM (GIS).
- STUDY OF RISK CRETERIONS.

PROBLEM IDENTIFICATION

- The timer approach has a drawback that even when there is less traffic on a road, green signal is still allocated to the road till its timer value falls to 0 while traffic on another road which is more, faces red signal at that time which causes congestion and time loss to commutators.

- Manual approach by traffic inspectors to give way to ambulance and to avoid restarting the timer signal system each time after providing way to ambulance.

- Most of the present systems are not automated and are prone to human errors.

OBJECTIVES

- Smooth and Uninterrupted Traffic flow.
- Increase in transportation system efficiency.
- Reduce Journey time and inconvenience.
- Enhance Road Safety.
- Smart Mobility.

REQUIREMENT SPECIFICATIONS

- **Hardware Requirements**
  - Raspberry Pi 3 B+.
  - IR Sensors.
- **Software Requirements**
  - Operating systems
  - Languages Used.
  - Application software.

Hardware Requirements

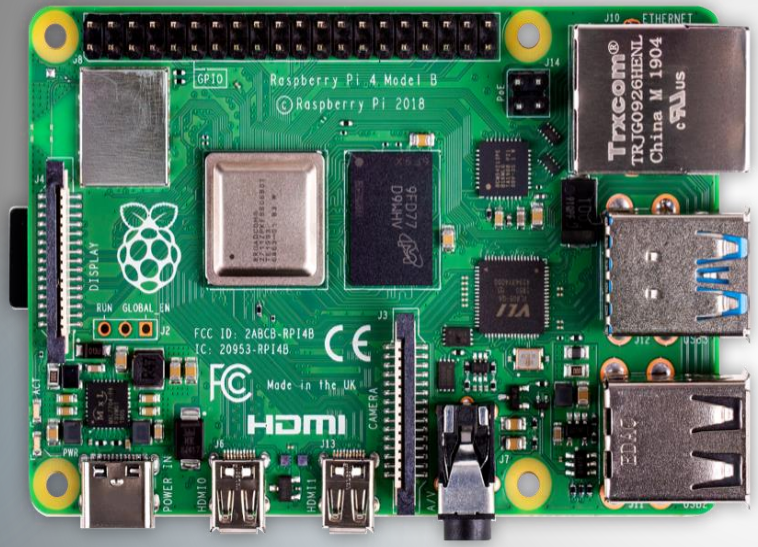


Fig : RASPBERRY PI 3 B+ microprocessor board.

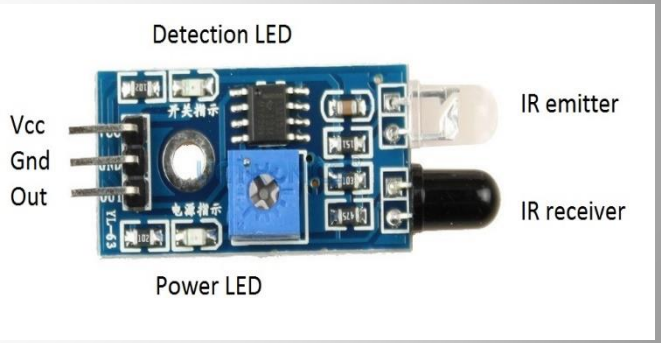


Fig : IR Sensors.

Software Requirements

- **Operating systems**

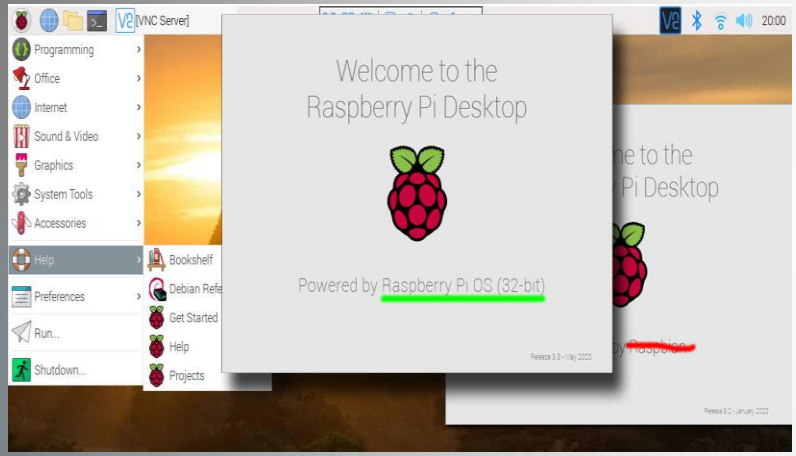


Fig: Raspbian operating system.

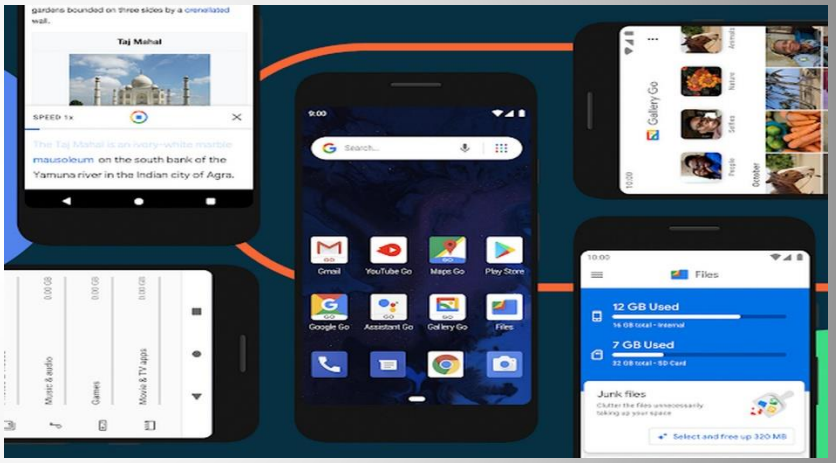


Fig: Android operating system.

Software Requirements

- **Languages Used**

Java Programing language used for android application development.

Python Programing language used for data collection and system working development.

Software Requirements

- **Application software**

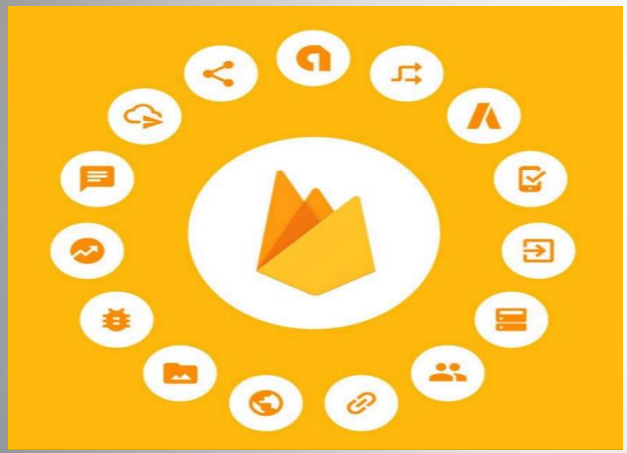


Fig: Firebase Applications.

Fig: Android Studio Application.

SYSTEM DESIGN

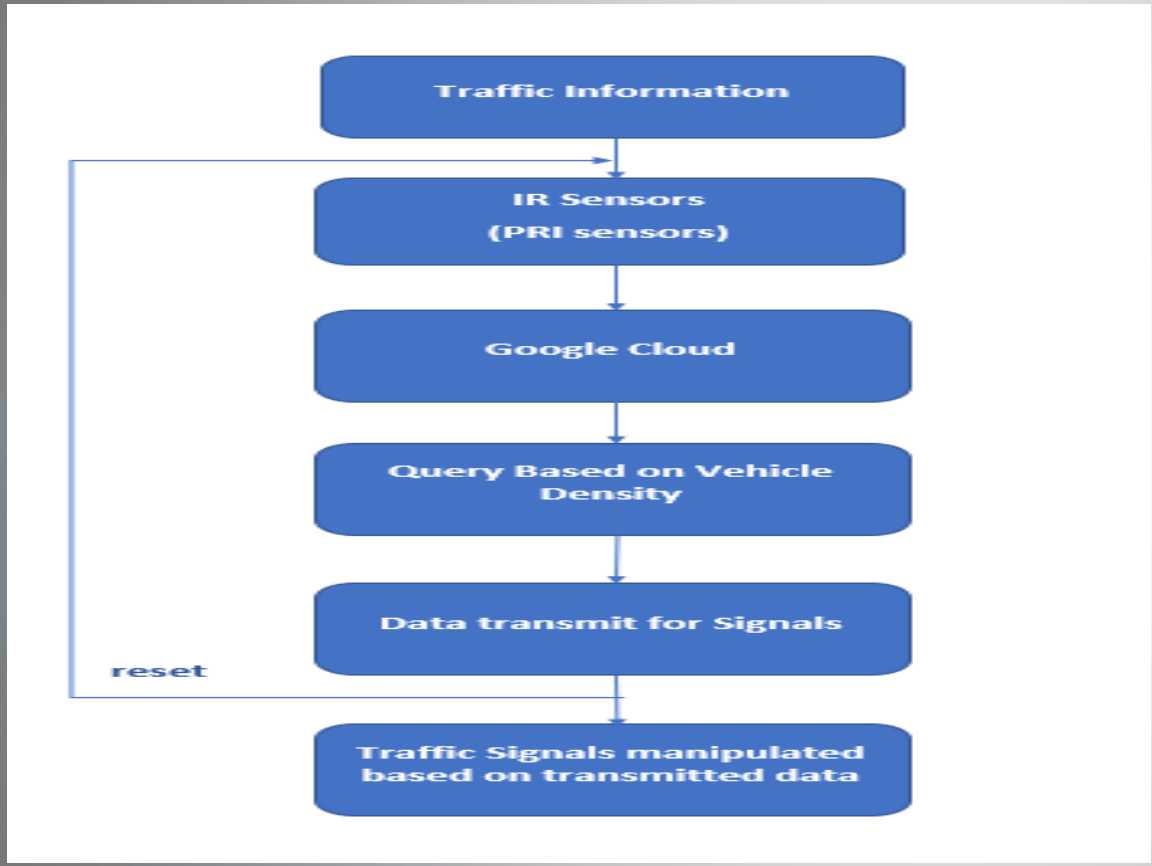


Fig : Flow chart of advance traffic management system.

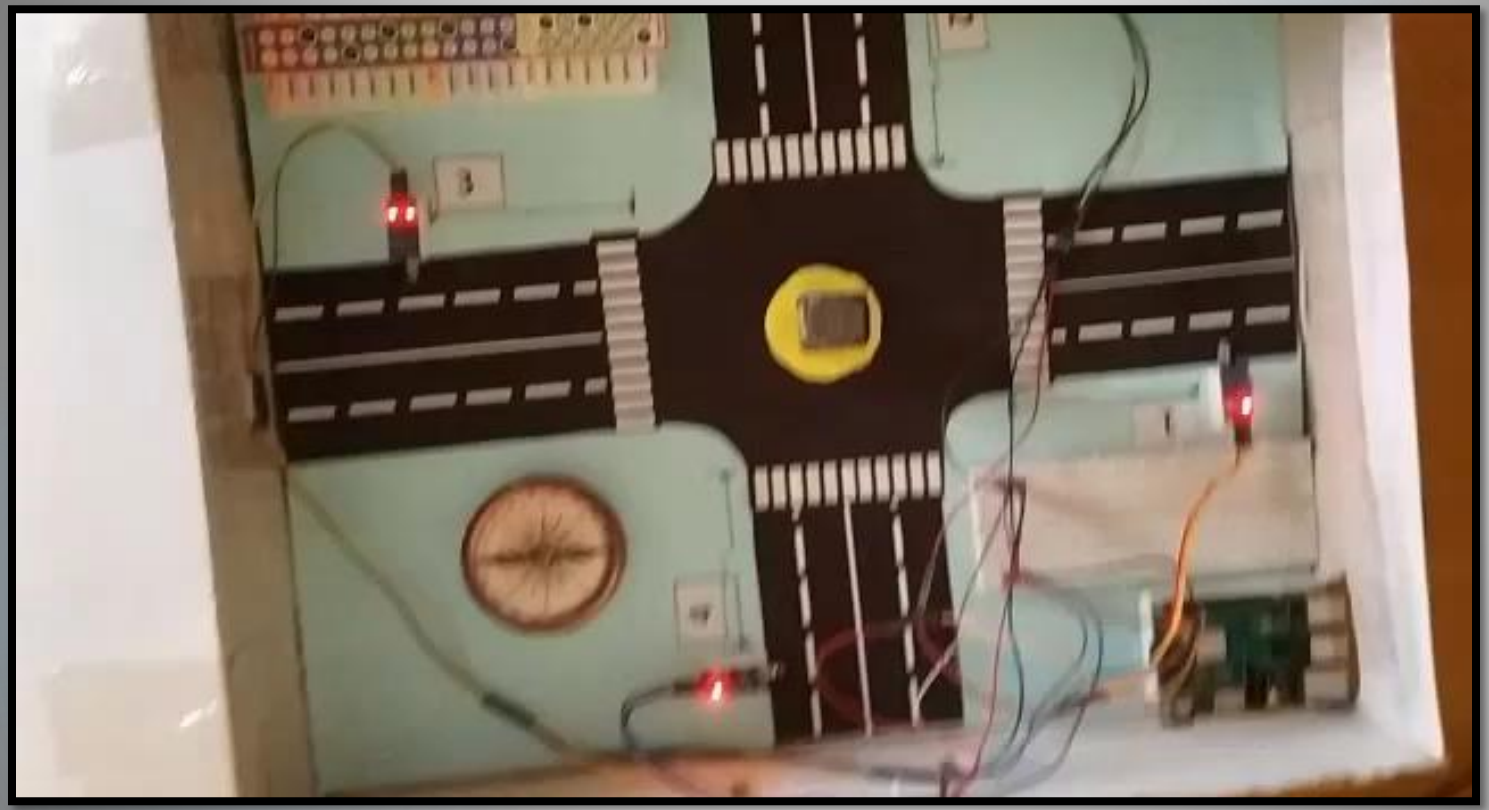
IMPLIMENTATION

Vehicle Sensing

- Active infrared sensors operate by transmitting energy from either a light-emitting diode (LED) or a laser diode.
- For each detection the count increments in each interval.

Signal Updating

- At initial stage the control is passed to signal one based upon density signal is manipulated after execution the control flow through the next signal.
- The value updated to the firebase based on density in which number of vehicles detected in an interval of time then based upon the count.
- The density value updated to firebase node the value stored in the format of JSON (java script object notation) in key value pairs .



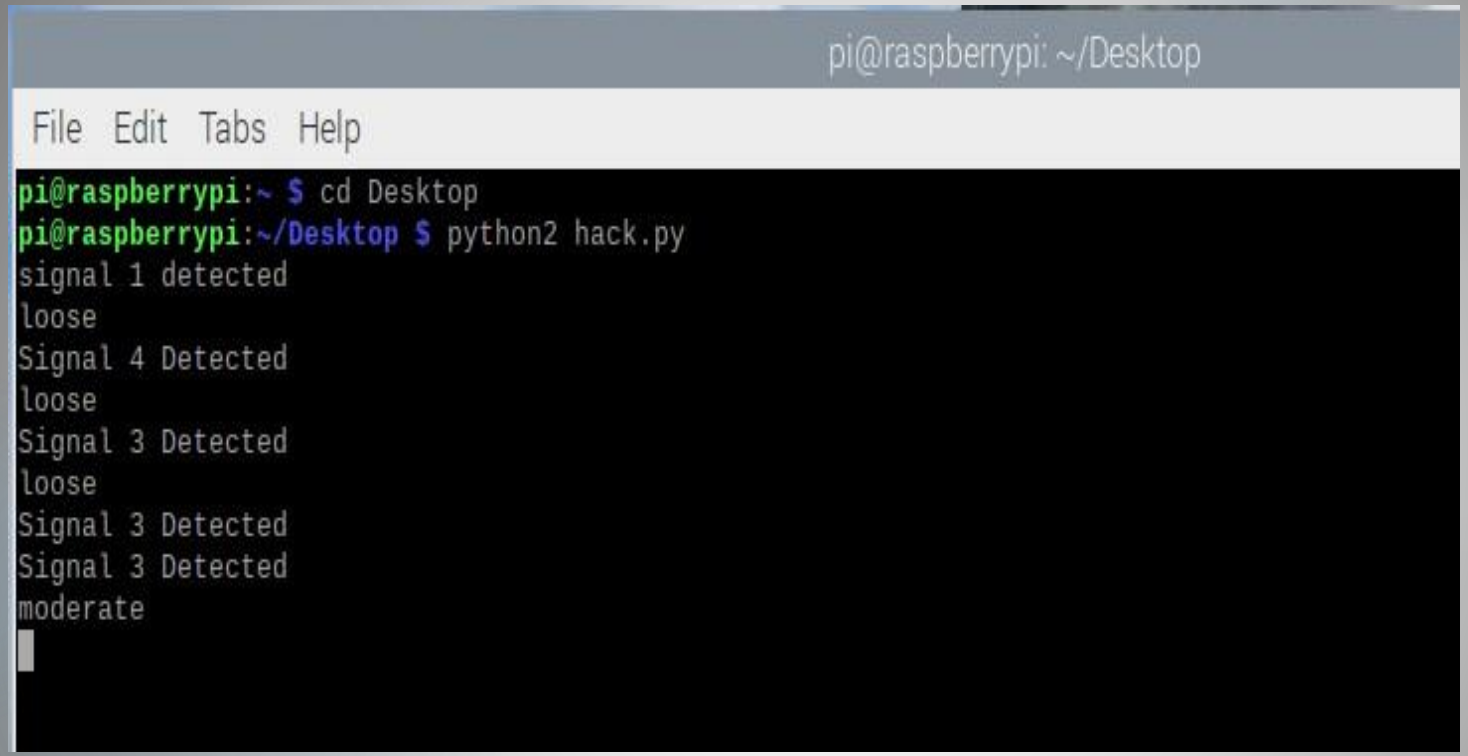


Fig : Signal Detected by IR Sensor displaying in Terminal.

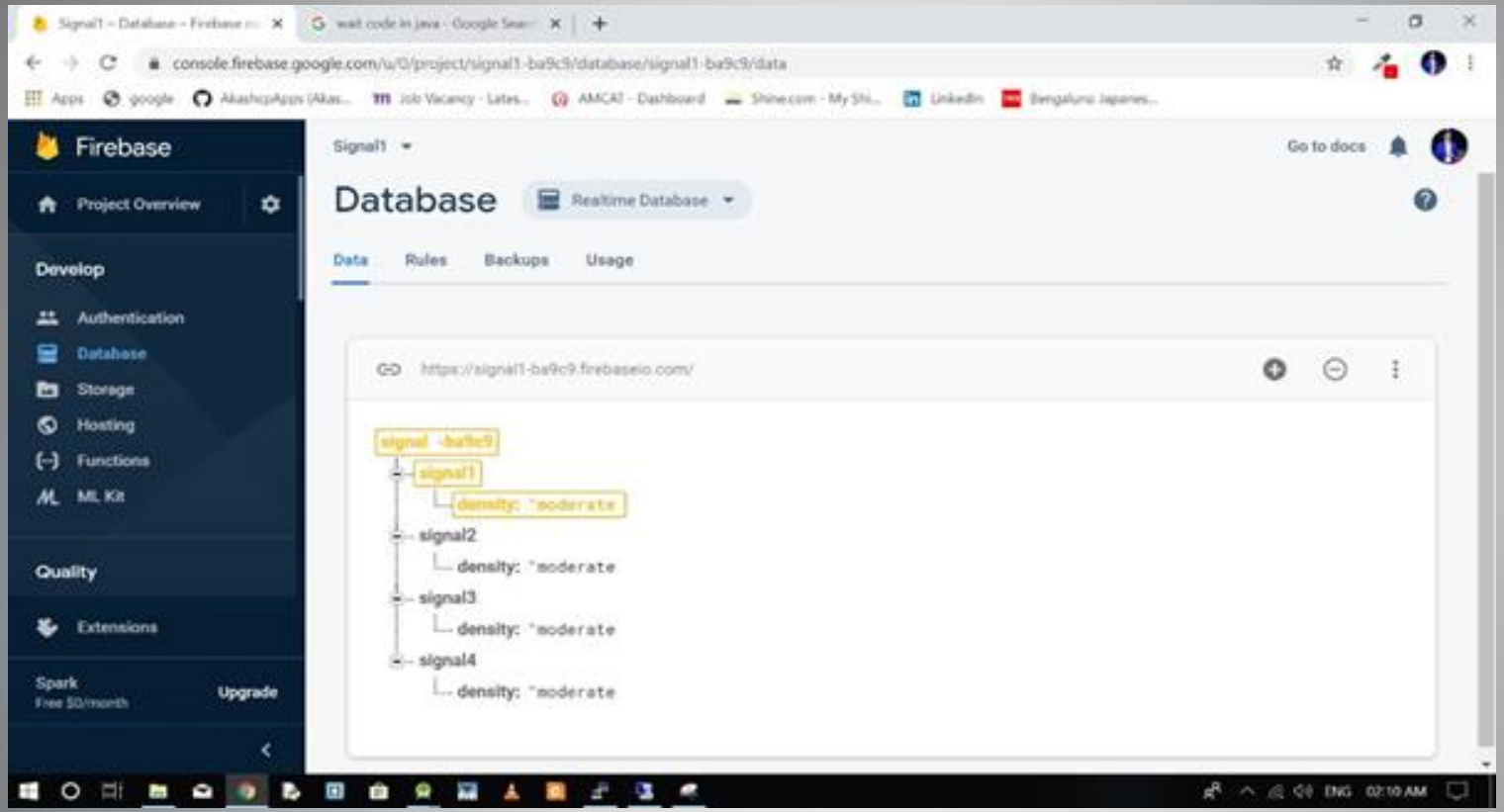


Fig : Value Updated by the Raspberry pi to Firebase Realtime Database.

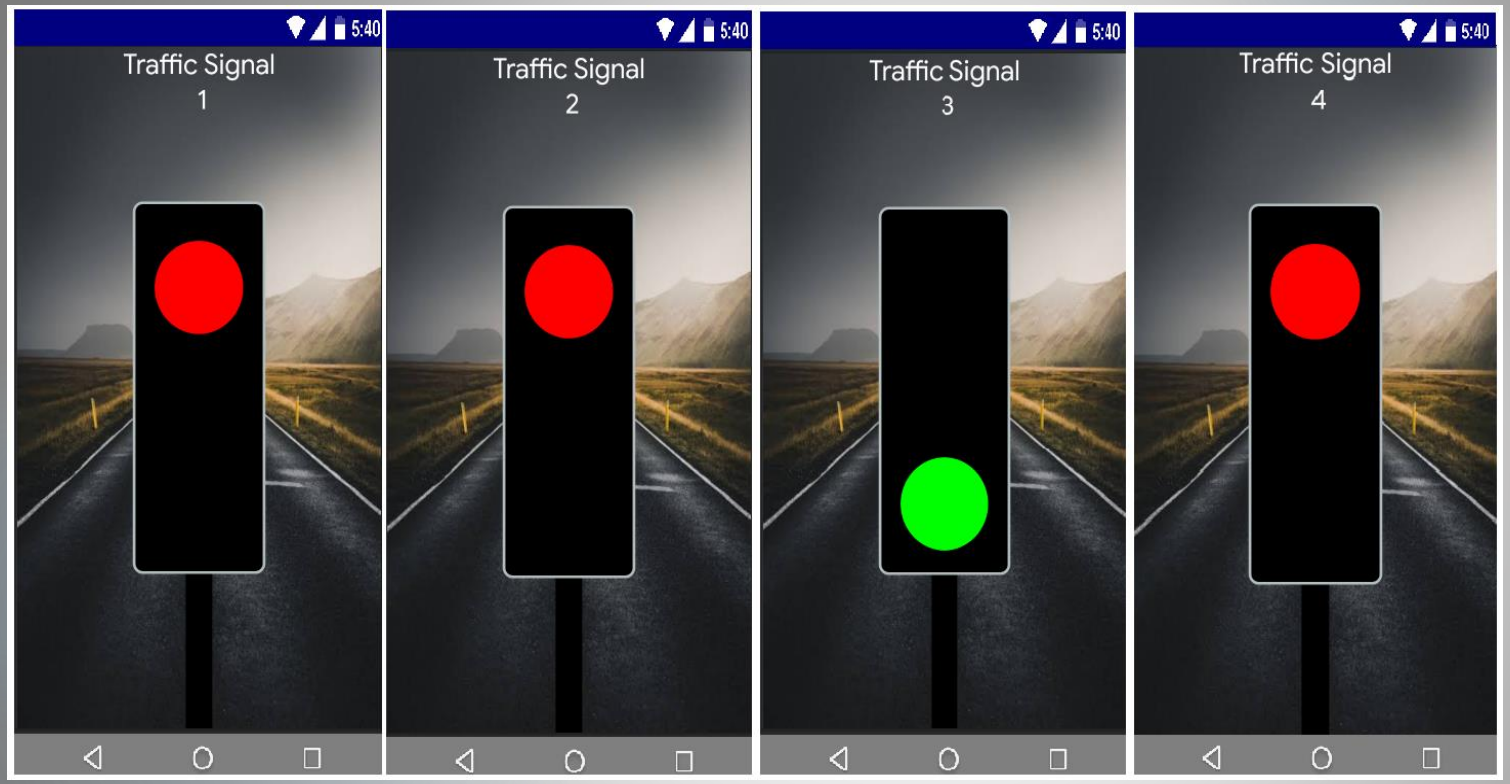


Fig : Android UI Provided for Signal Demonstration.

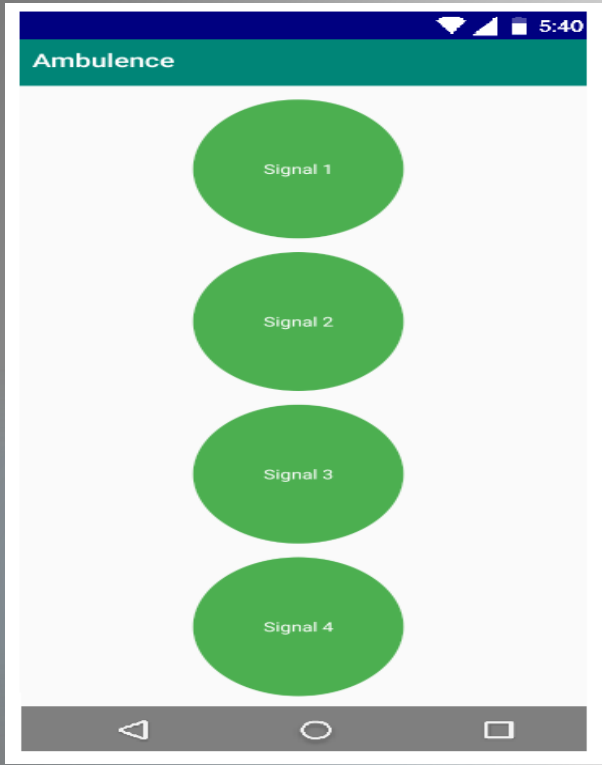


Fig : Android UI provided for ambulance admin.

- Android user interface provided for ambulance for controlling the signal for few minutes in case of emergency.
- Signals are controlled based on directions i.e.
  - Signal 1 : South.
  - Signal 2: East.
  - Signal 3 : North.
  - Signal 4: West.

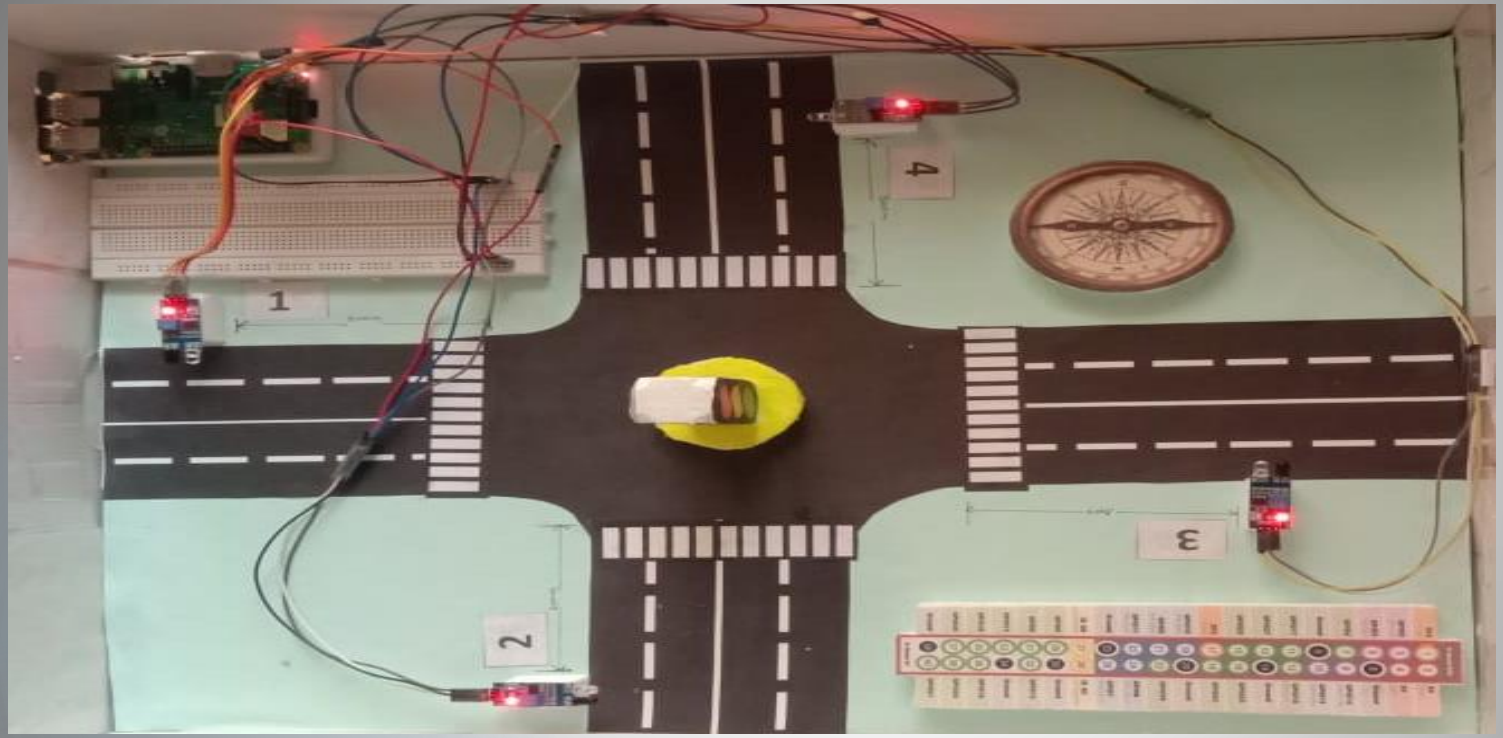


Fig : Advanced traffic management system using google cloud model.

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THANK YOU…

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