Conrad Challenge Pitch

AI based Traffic Controller

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About our product

1) A system for controlling the traffic light by image processing.

2) The system will detect vehicles through images instead of using electronic sensors embedded in the pavement.

3) The image sequence will then be analyzed using digital image processing for vehicle detection, and according to traffic conditions on the road, traffic lights can be controlled.

4) It captures an image and compares it with the reference image.

5) Creates green corridor for emergency vehicles when detected.

Problem Statement

1) Average time per week lost at a traffic jam: 8 hours.
2) It is also noticed that a common man wastes almost 12 liters/ 840 Rupees per week on fuel in a traffic jam.
3) Traffic jams and congestion create several issues like wastage of time, excess fuel consumption.
4) In some situations, emergency vehicles like ambulances and fire engines are not able to pass through because of heavy traffic congestion.
5) No vehicles on a junction but the green light is on for that junction. Whereas, on the other junction there exists a queue of waiting vehicles but the red light is on for that junction.

We also conducted a survey

It indicates that junction signals is a major cause for traffic jams
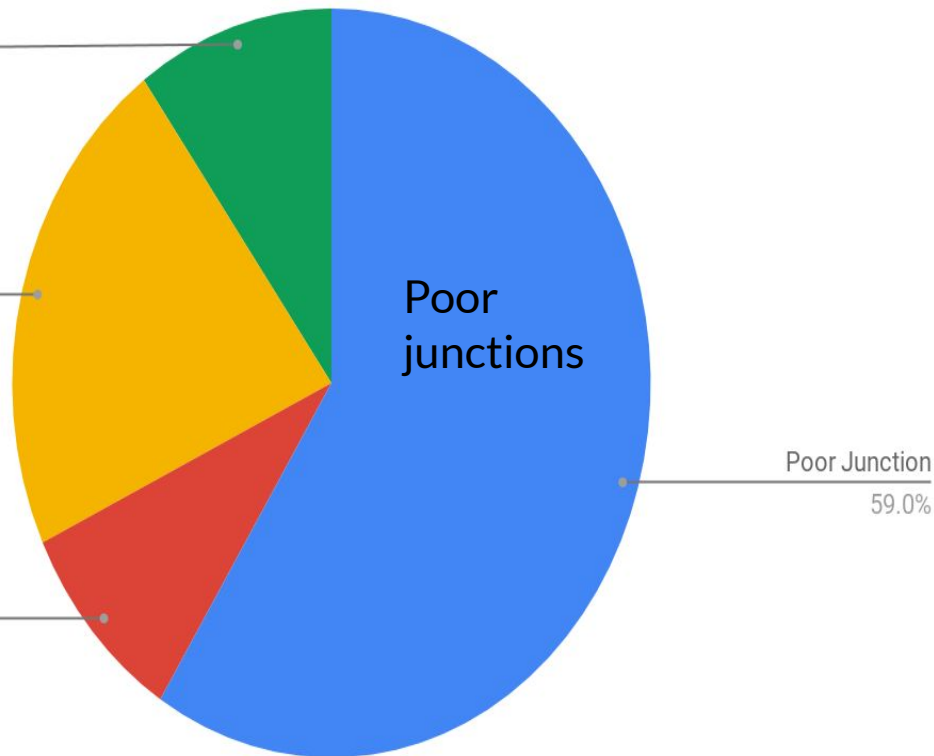
Survey 2

Increasing Vehicles
10.0%

Human Error
22.0%

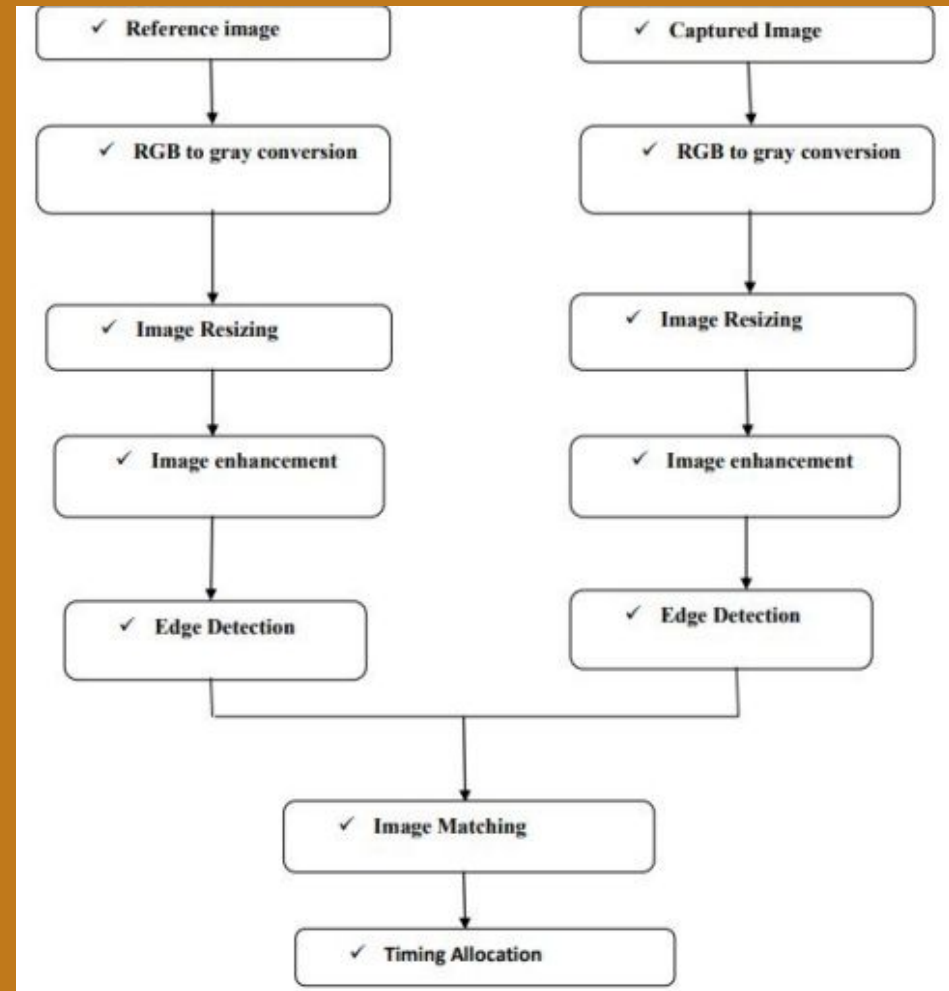Poor junctions

Poor Junction
59.0%

Small Roads
9.0%

Working of our product

Objective: To design an automated traffic-light control system that switches the signals based on the density of vehicles on a particular road

Proposed Image Processing Methodology

Unique factors of our product

1) Ease of Operation.
2) As we can improve transportation security by implementing it.
3) No need for human supervision.
4) Control of traffic lights in accordance with the preset control mechanisms.
5) It can achieve optimal road traffic control solutions with the help of the system's intellect which is real-time video processing.
6) It maximizes the efficiency (approximately 75%) of the existing traffic control.
7) Reduce the vehicle waiting delay on road by removing the traffic congestion.
8) It can detect any kind of vehicle including Rickshaws, Cars, and Bus, etc.
9) Increased road safety.
10) It reduces the travel time in the city.

Unique factors of our product

11) Continuous Video monitoring system of road situation at intersections.

12) It can also reduce the possibility of accidents on the road.

13) Our system has a special ability to implement law enforcement using the RFID detection system.

14) Our system is cost-effective and it can be easily setup

15) 98% Accuracy

16) Easily Implementable

17) Number Plate Scanning - Get complete car details and catch hold of people who break rules

18) Overriding Technology for emergency vehicles like fire brigades, police vehicles, VIP vehicles, etc, and greenway for ambulances.

19) Can work when electricity is not there as it is solar-powered.

20) It is very cost-effective as the use of our technique removes the need for extra hardware such as sound sensors & magnetic loops embedded in pavements.

Market Consideration :

Existing Competitors :
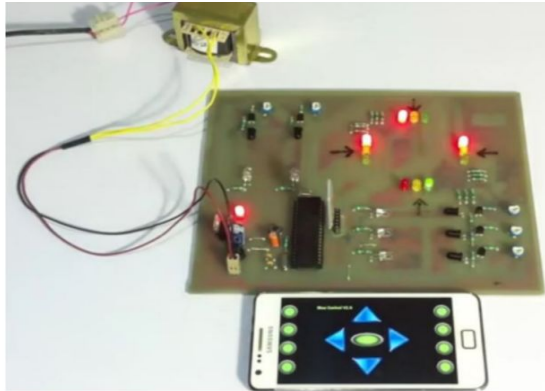
1. IR Sensor Based
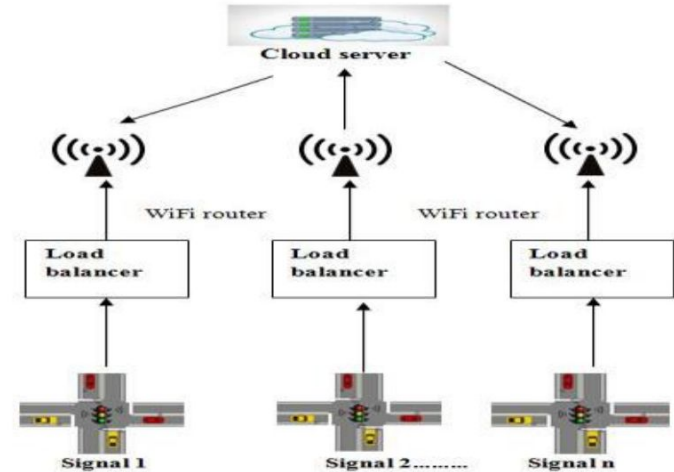
2. Establishing connection to the cloud using WIFI Router

Customer : Smart City Project

Business Model

1) Value Proposition

2) Target Market

3) Operating Model

4) Key Resources

5) Cost Structure

6) Revenue Streams

Value Proposition: Target Market:

- What we offer to the customer:
- A streamlined system to control traffic which prioritises efficiency.
- A system which saves fuel and time, decreases air and noise pollution and leads to better commuting.
- A service reducing congestion at junctions and an increase in pedestrian safety.

- Part of the market to which our product is marketed:
- Smart Cities e.g. Pune Smart City looking for technological additions to improve quality of life.
- Junctions receiving a high number of vehicles daily and junctions near areas prone to regular traffic jams.

Operating Model: Key Resources:

- Representation of how our company functions to its customers and beneficiaries:
- Designing the appropriate software to control the junctions.
- Implementing the software and troubleshooting it.
- Goal: Having the software implemented throughout the city.

- Resources needed to create and deliver on the value proposition:
- Initial rounds of marketing and funding.
- Software required to run the offered service.
- Junctions equipped with the necessary hardware .

Cost Structure:

- Important costs required to make and create our value proposition:
- Costs for the hardware i.e. the imaging system.
- Costs for implementing the hardware and labour.
- Costs to regularly repair and maintain the system.

Revenue Streams:

- Different streams of compensation from the customers for the service provided:
- Selling the idea to the representatives of the Smart Cities.
- Obtaining a government contract through the Smart City Representatives.
- Maintaining the software in exchange for a set amount.

Conclusion