

SMART TRAFFIC SIGNAL OPTIMIZATION.

connection and modelling:

TO Various collect real Lime intersection. data Structure LUC traffic data can define at following the Java program.

```
public class Traffic data
```

```
Private int intersection:
```

```
private Locate Time
```

```
private int vehicle counts
```

```
private double average speed:
```

```
private int queue length:
```

```
private int pedestrian crossing
```

```
}
```

This Information conditions speeds. data we structure captures need including to vehicle queue the analyze to more traffic Counts and average

Crossings fields with The help Intersect on Specific Locations and associate and timestamp the time data periods.

Algorithm Design

TO the optimize traffic signal data, following algorithm. two timings Based car develop on the

Algorithm. Traffic signal optimization

Input: Traff relate for all Intersect

output optimized traffic signals

For each Intersection:

Analyze calculate the the traffic optimazation data signal to determine time and

Traffic density

→Queue length

→ pedestrian crossing.

peak hour patterns

Adjust the traffic signal timing.

manual update the to adjustment Signal 75 timings required

Else if

Return the signal timing.

The traffic timings Signals algorithm data for analyse determine each the Intersection accordingly. It Interال traffic managers the optimation and signal adjust the for manual if needed.

Implementation:

To Implement Java we components. the traffic signal optimization the following System main can

1 Traffic Data collections

This Class real-time and be traffic-data Storing it in for from the traffic data gathering Sensors

data struct line-

Traffic Lata optimizes

THE S 01055 Traffic signal optimization the Signal traffic data timings and each for Implement algorithm compute the to the intersection. analyze optimal

Traffic signal controller:

This class interface with the each intersection, updating on the optimized traffic the parameters traffic signal optimize signals timings provided by based the

Traffic mentoring Dashboard:

This class traffic managers provide and traffic signal timings a Interface to for monitor city officials 15 needed-

The Java components traffic signal respond to application to optimization changing Integrate that traffic pattern.

real-time

Visual representation and Reporting:

signal

Timing chartS

Line charts green times each Intersected on displaying cycle Lengths for calculating traffic

performance metrics

charts (time coverage graphs wart time other key Performance Showing on Indicators.
improvements and

user Interaction-

The Traffic monitoring Dashboard will serve Interface for traffic managers to as the and traffic city
optimization the following should included in This dashboard

real-time traffic monitoring

Live traffic each visualizations conditions 04 and Traffic signal conditions timings Of Intersection-
manual

Signal Timing Adjustments

Ability override the needed System. for optimized with managers to timings rat leered manually
each the changes

performance

metrics and Recovering

Dashboards performance and Indicators such a congestion reduction, and showing Over the wart
times, traffic flow

efficiency.

Historical data and Trend analytics

Ability traffic data to signal finding and historical adjustments and patterns optimization