

Avoiding Road Traffic Congestion using Dynamic Traffic Assignment Approach

PROJECT SYNOPSIS

**BACHELOR OF ENGINEERING
Computer Engineering**

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Contents

1	Title	1
2	Domain	1
3	Keywords	1
4	Team	1
5	Objective	1
6	Scope	1
7	Feasibility Study	2
8	Technical Details	2
9	Innovativeness and Usefulness	2
10	Brief Description	3
11	Probable Deadline for project completion	4
12	References	4

List of Figures

1	System Architecture Diagram	3
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1 Title

Incremental Traffic Assignment Approach to avoid Road Traffic Congestion.

2 Domain

Embedded Systems, Distributed Control Systems

3 Keywords

Decentralized, Incremental Traffic Assignment, Greedy Algorithm, Web Service, IoT, Web Databases.

4 Team

Group Id: 4

Team Members:

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2. Mohammad Moheed Inamdar - 41025
3. Ajay Singh Rajpurohit - 41061

5 Objective

1. To Observe Current Traffic Conditions.
2. To Mediate Road Traffic Flow.
3. To Dynamically Control Traffic Signals.

6 Scope

1. IoT Based Traffic Signal Control (Arduino)
2. Decentralized Algorithm to create changes in Signal timings

7 Feasibility Study

1. Necessary Tools and their feasibility:

- Arduino Uno v3, low cost, feasible.
- Internet GSM Connectivity, low cost, feasible.

2. Schedule Feasibility

- Low number of modules.
- Use of Simulation to speed up development.

3. Economic feasibility

- Commodity hardware.
- Google Traffic API is free to use.
- Redis DB is free to use.

4. Ethical Feasibility

- License applied to our project is GNU GPLv3.0
- No copyrights or license laws were disobeyed.

5. Operational Feasibility

- Beneficial as it uses Least Modification to current Traffic System.
- Doesn't inhibit driver's experience.
- Reduces chances of Congestion Creation by preventing it from building up.

8 Technical Details

Platform

- Linux for Arduino

Software Specification

- Python 2.7+, 3.5+

Hardware Specification

- Arduino Uno

Dataset

- LatLong Objects from Google Traffic API

9 Innovativeness and Usefulness

1. Implementation of an Automatic Solution to Traffic Assignment Problem
2. Dynamic / Self-Optimizing Solution
3. Deployable over any existent Traffic Systems

10 Brief Description

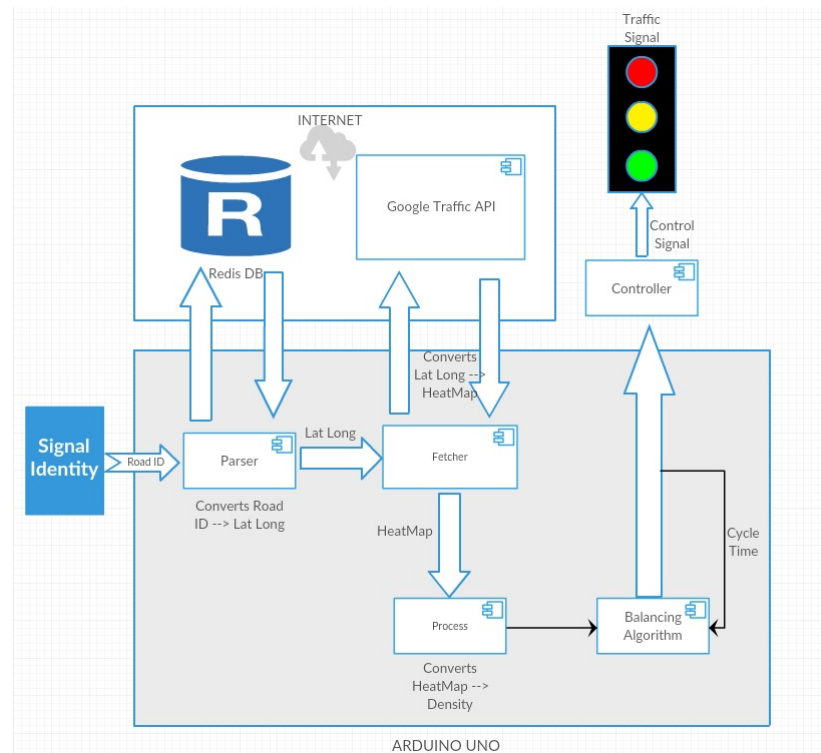


Figure 1: System Architecture Diagram

1. Road ID: The roads connected to the current signal
2. LatLong Objects: Objects defined via Google Traffic API. Contains Coordinates of point locations to consider (road).
3. HeatMap: The density map of traffic with respect to a colour gradient.
4. Cycle Time: The duration of Red, Green and Yellow lights for each lane as a Set.

11 Probable Deadline for project completion

Last week of March - 2018

12 References

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