Engineering, Design & Innovation

THE WICKED PROBLEM

TRAFFIC CONGESTION AT ROAD INTERSECTIONS

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Problem Definition

- How might we regulate the traffic light signals for commuters in order to avoid traffic jams at busy intersections?

Prevailing Challenges

- Lack of compliance with the traffic rules
- Signals with fixed timer
- No familiarity with technological equipment
- Outsourced operating mechanism

Entangled System Traps & Leverage Points

- **System Traps:**

(i) Tragedy of the commons

(ii) Shifting the burden to the inventor

(iii) Drift to low performance

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- **Leverage Points:**

(i) Goals
(ii) Self-Organization
(iii) Information Flows

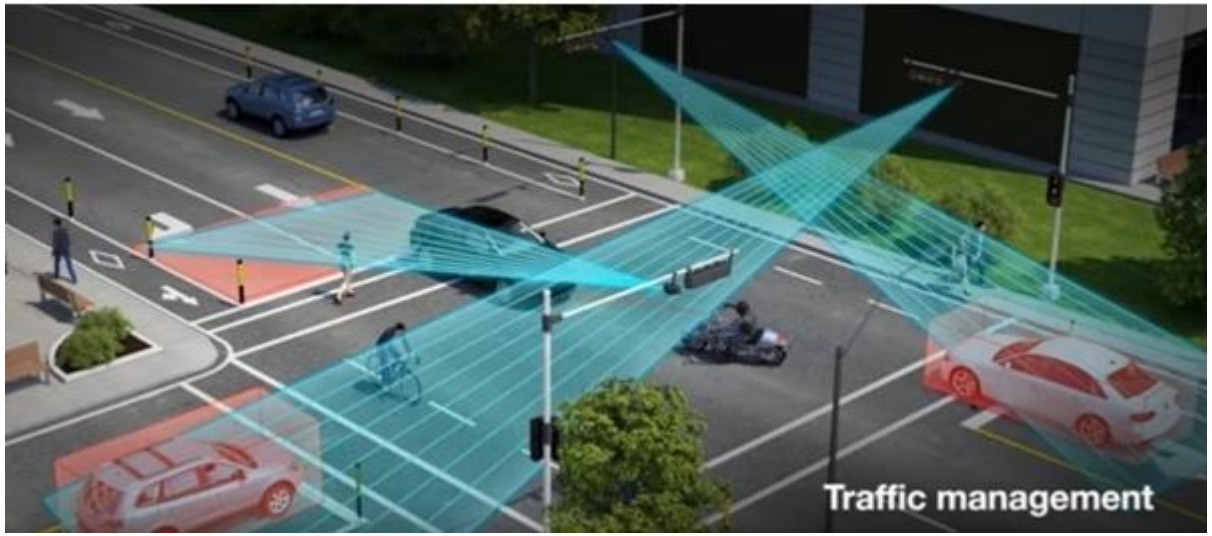
Potential Solution

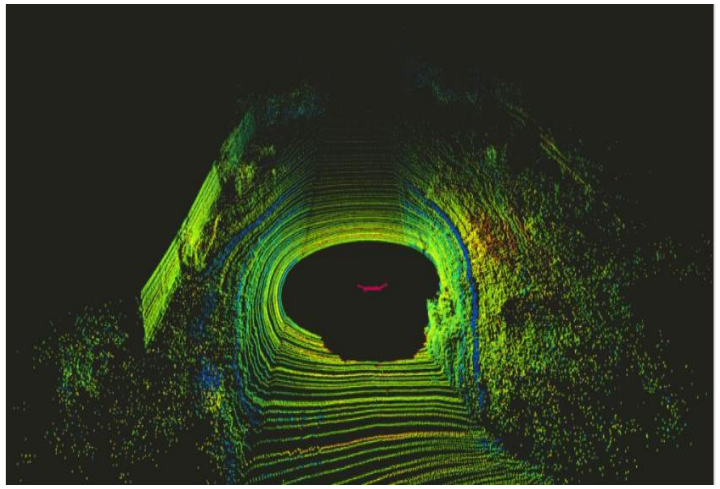
Designing **Smart Traffic Light System**

that also enables traffic sergeant to adjust the signal timer accordingly to accommodate the lane possessing heavy traffic

Potential Solutions (Contd…)

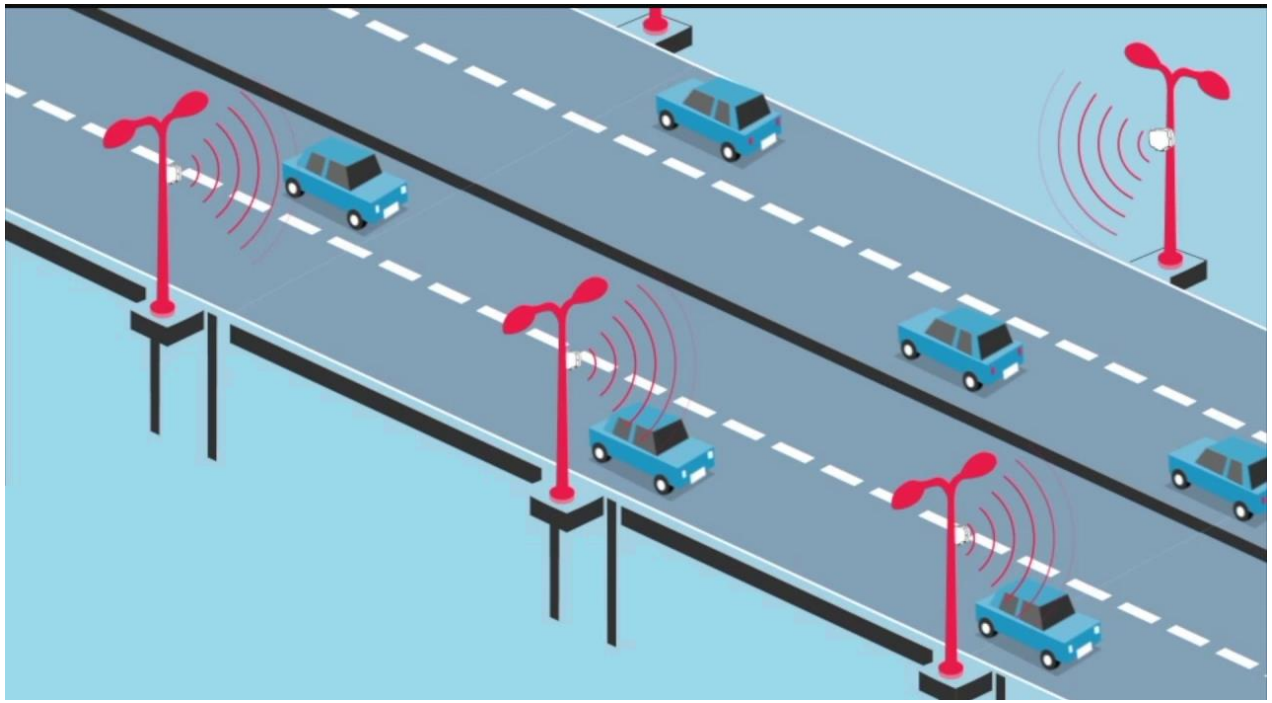
(i) LIDAR based traffic light controller

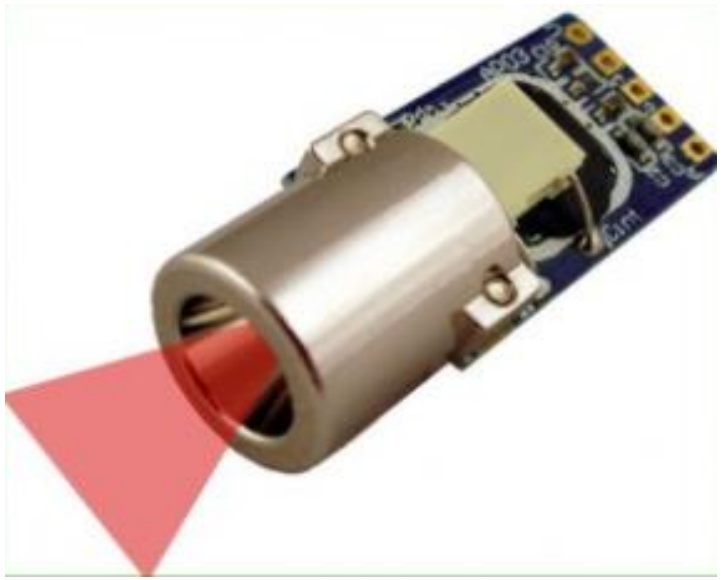




Potential Solutions (Contd…)

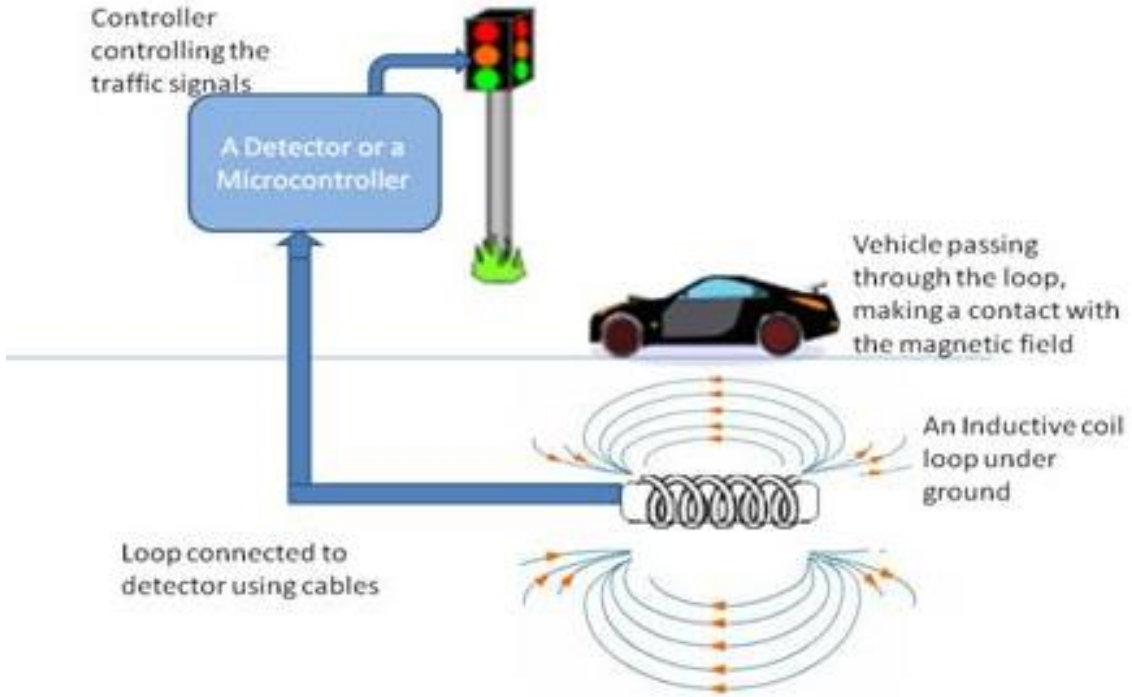
(ii) Infrared Radar based traffic light controller

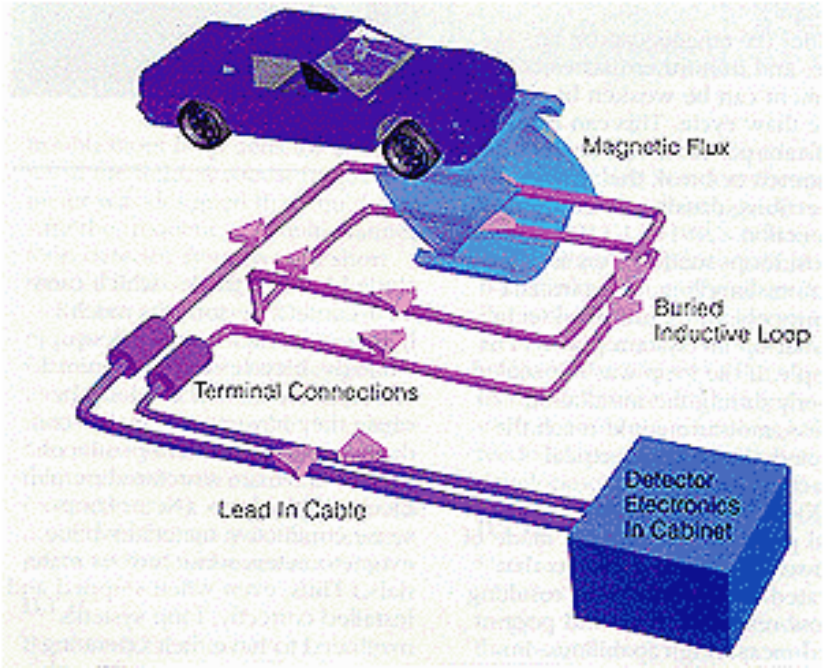




Potential Solutions (Contd…)

(iii) Inductive loop based traffic light controller



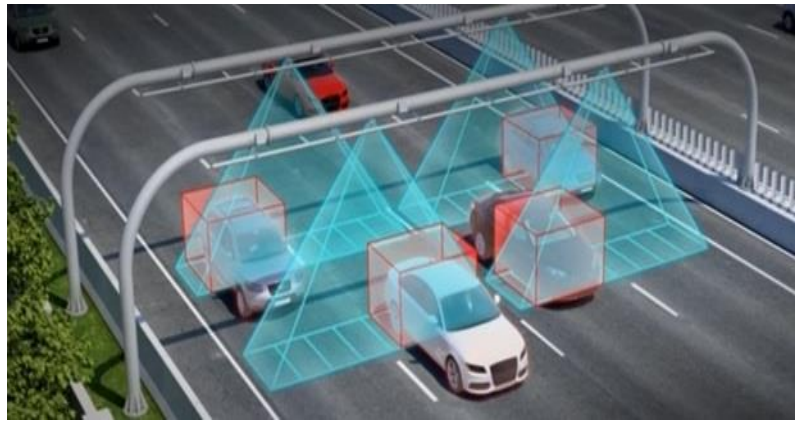


Potential Solutions (Contd…)

(iv) Microwave Sensor

(v) Image sensor

(vi) Global positioning system (GPS)



Assumptions

- Currently, traffic conditions at intersections are not good.
- The relevant stake holders would co-operate.
- The required sensors would be available easily in the local market.
- People are not happy with their commuting experience.

Validating Prototype

Learning Outcomes From the Prototype

- Positive response from the traffic policemen.
- Need of renewable energy powered traffic signaling system.
- Manual controlling of signal is feasible.

Features & Attributes

- Ease in routine commuting
- Less hectic for traffic sergeant in regulating the traffic
- Reduced anxiety & mental stress
- Potentially expandable to other intersections as well
- Decrement in road accidents
- Cost effective
- Environment friendly
- Can be embedded on the existing traffic signals

Pictorial Evidence of the Field Survey

THANK YOU!