King Fahd University of Petroleum and Minerals

College of Computer Sciences and Engineering (CCSE)

COE 485

Senior Design Project

Intelligent Transportation System

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1 Problem Description

It is known that traffic jams in Riyadh cause huge problems like transport patients to hospitals and transportation in general. The problem is that many people are not willing to cross the red light in an intersection when an emergency vehicle due to the high ticket fee. We decided to go with an intelligent transportation system to control the traffic and manage the congestion. The idea is not new as it is already implemented in many cities such as Abu-Dhabi. The main focus of our project is the traffic lights and how we can manage it and set priorities to the cars. Other focuses are mentioned in the requirements.

2 Main User's Requirements

- The traffic light shall not be green on an empty street.
- The green light time shall be determined by the streets' traffic.
- The traffic lights controller shall not coast more than 40$(given that the traffic lights already have cameras).
- The system shall be easy to expand to any traffic light with regular traffic mentoring cameras.
- The system shall have different types of vehicles with different priorities such as private, light trucks, heavy trucks, police, ambulance etc.

3 Possible Approaches

- A possible approach to implement this project is by using Any Logic simulation software as it has many futures for implementing road infrastructure planning and traffic light sequencing and timing. We would figure out how to connect an external server to act as the cloud to the system.
- Another way to implement this project is by implementing it in Packet Tracer software as it provides a suitable infrastructure for networking and communication, but it would not be easy to integrate it with a cloud server as we need to connect packet tracer network with an outer server to be able to use the cloud.

4 Phases

- Researching simulation software and learning how to use them.
- Designing the traffic system
- Program the cloud host server
- Implementation in the simulation software

5 Tasks and Initial Plan

Task Details	Working Team Member	Duration
Research the literature	All	1 Week
Research about the any logic possible features and learn how to use it and do some experiments on it	All	1 Week
Use Cases & Activity Diagrams	All	2-4 Days (Deadline on week 4)
Project Concept, Architecture, and Deployment Diagram	All	1 Week (Deadline on week 6)
Design the road and the traffic light. And Integrate the design of the road and traffic infrastructure in the simulation software.	Adnan and Abdullah	3-5 Days
Implement a cloud server and link it with the emulation software	Saleh	1 Week

Figuring out how to control the traffic light signal. And how to set priority to different types of vehicles.	All	2-4 Days
Mid-semester Progress report & Presentation	All	3-5 Days
Start configuring the traffic light with the integration of the priority system.	All	1 Week
Design a computer vision system that identifies emergency vehicles and measures the level of congestion in each side in the intersection	All	1 Week
Integrate the computer vision with the simulation tool	All	1 Week