



Introduction & Background :

Cars are the main transport way in Saudi Arabia when moving to different places inside the city. A key problem that make it uncomfortable is the unnecessary waiting at the traffic signal. In the current system sometimes, a person has to wait for a long time at a traffic junction for the signal to become green even if there are no cars on the other roads. To solve this problem, this project develops an intelligent system to dynamically controls the period of red and green lights in each direction of a traffic junction. Our system uses cameras installed on each side of a junction that captures the presence of road traffic. A deep learning-based control algorithm at the core of our system determines the period of red and green signals based on the number of cars present in each direction of a traffic junction. It is expected that our system will help in reducing commute time for city dwellers by reducing unnecessary waiting times at traffic junctions.

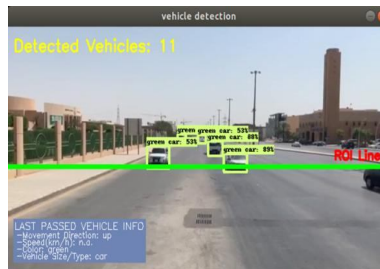


Objective:

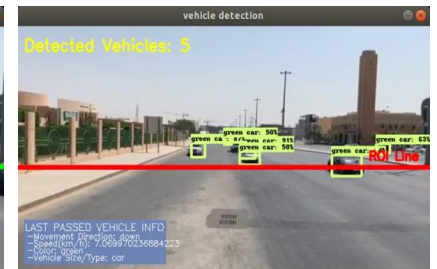
- ✓ Implement a deep-learning model for detection and counting vehicle .
- ✓ Develop a fixable algorithm to control the red-green light period based on the number of vehicle at each light of a traffic junction
- ✓ Develop an admin interface (command line) to the parameters for controlling the traffic light .



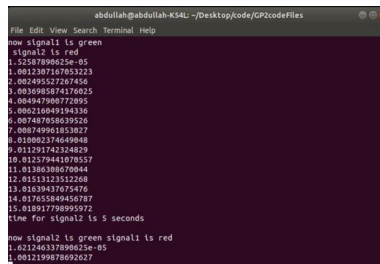
Result:



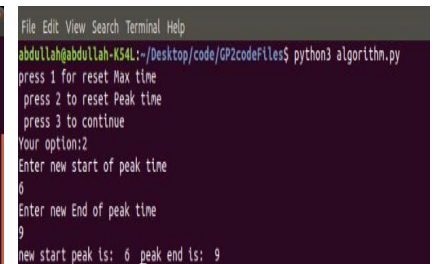
Car detection interface



Car detection interface



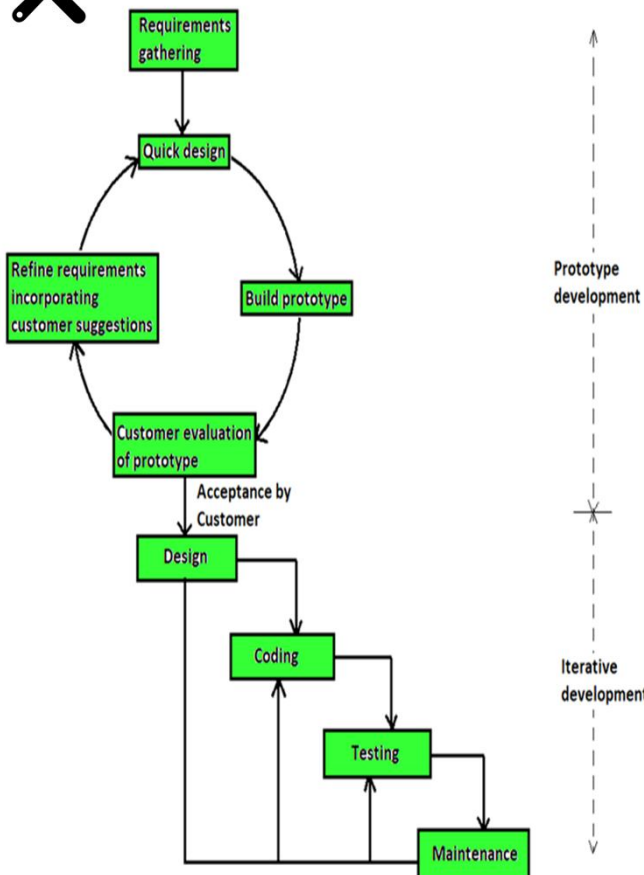
Signals counter interface



Admin menu interface



Methodology:



Future work:

- The system should have more than two signal.
- The system should have more information about the street status and situation .
- The system should calculate every signal time depends on the type of cars, that's means one car should not take same time that's gives for one truck or one motorcycle.



Conclusion:

ITS system should contribute to reduce the waiting time at the traffic light. This is done by dividing the time between signals based on the number of cars at each signal and make sure that the signal that has no car is counted remains red In order to give time to the highest priority signals

Reference:

[1] Alan Dennis, Barbara Haley Wixom, System Analysis and Design 5th Edition, Wiley publishing, 2012.
 [2] ElProCus - Electronic Projects for Engineering Students. (2019). *Dynamic Road Traffic Signals Control System with help of IR Sensors*. [online] Available at: <https://www.elprocus.com/dynamic-road-traffic-signal-control/> [Accessed 7 Apr. 2019]