The following points summarises the features of the present invention and their advantages:

1. Advance Intelligence Traffic Control System (AITCS) vehicle traffic junction design have various sensor point:

   Sensor 1 (S1), Sensor 2 (S2), Sensor 3 (S3), Traffic Light Sensor (TS) and Exit Sensor (ES)

   - Each sensor point may have multi sensor depend on the number of vehicle lane. And individual sensor will send information captured back to the computer for logical processing.
   - Information capture at each sensor points are such as vehicle speed (VS) and vehicle ID*(VID).

2. Central Brain Unit (CBU), it is computer unit where the AITCS logical program (~~Claim~~ Point 6) is installed and processing all information capture from all sensors from ~~Claim~~ Point 1. And thus controlling the traffic junction traffic light signals.

3. Traffic light signals control unit. This is an interface unit between the CBU (Point ~~Claim~~ 2) and traffic light signal.

4. CBU backup Unit, this is an auto fail over system in case the main CBU (Point ~~Claim~~ 2) fail due to any reasons, backup unit will kicks in to take over the control.

5. Vehicle ID unit install at all vehicle to identify vehicle identity by Point ~~Claim~~ 1 sensors.

6. AITCS logical program process captured information from Point ~~Claim~~ 1 to determine different traffic scenario. Information such as speed of vehicle and vehicle ID, it uses pre-set data such as distance, number of vehicles and time to calculate.

7. A priority traffic or main traffic direction can be input into the AITCS logical program to let the program know which traffic direction have priority during a similar occurrence or calculated result.

8. AITCS backend and remote program use to monitor all AITCS traffic light system in a centralised location. It has the remote function to control and update all AITCS system. This backend program is also a central database to capture and generate reports.

9. AITCS logical program priority list are classified into different priority itself example, Ambulance (Class 1), Fire Engine (Class 2) and Police (Class 3) etc. And in an event when an AITCS junction has all of the 3 emergency vehicles approaching at the same time, AITCS logical program will give priority to Class 1 first follow by Class 2 and Class 3. Classification of could be determine by local authority and changes are allowed if necessary.

10. AITCS logical program method of providing a safer traffic junction, by comparing vehicle driving speed from various sensors mentioned in Point ~~Claim~~ 1.

    Logical program (Point ~~Claim~~ 6) will than determine if the vehicle is

    A. Stopping (Speed reduced at different sensor (Point ~~Claim~~ 1)
    B. Having intention to stop (Speed remain or increasing at different sensor (Point ~~Claim~~ 1))
    C. Able to stop in time (comparing the speed and the distance of the vehicle from the traffic light).

    If situation is not safe for other traffic direction to proceed, it will hold the supposing green light direction traffic red until the unsafe vehicle

    i. Crossed the junction (after ES sensor from Point ~~claim~~ 1 detected the vehicle)
    ii. Stopped (after TS sensor from Point ~~claim~~ 1 detected the vehicle did not cross the junction)
    iii. Time out period (calculated time that this vehicle will cross sensor ES plus a certain number of time).

11. AITCS logical program method of providing a safer traffic junction, in an event when the North-South traffic is on green light and a speeding vehicle is detected by sensor (Point ~~Claim~~ 1) approaching for the other direction (East-West), AITCS logical program have the function to
    A. Warn the speeding vehicle by flashing its RED light/s or turn on a warning sign.
    B. Turn the North-South direction traffic to RED to prevent accident from happening.

12. AITCS logical program method of authorities use and special operations, meaning of giving priority to the authorised vehicle traveling direction. These authorised vehicles could be emergency vehicles and special operation could be VIP escort convoy.

    AITCS logical program is design to accept a priority list (Point ~~Claim~~ 9) of vehicle ID to give priority to and when the ID matches the vehicle ID capture from Point ~~claim~~ 1, system will turn on all traffic direction to Red and only the priority direction to Green.

13. AITCS logical program method of giving priority to emergency vehicles in Point ~~claim~~ 12, is to use a switchable status or vehicle ID for the sensor in Point ~~claim~~ 1 to detect. This switchable function can be tagged on together with the siren, when emergency vehicle turned on the siren during emergency, the status or vehicle ID will change to high priority which is listed in the priority list in Point ~~claim~~ 9.

    During non-emergency time, when the siren is not turned on, the status or vehicle ID remain in normal mode and the AITCS will detect the vehicle as an ordinary vehicle without priority.

14. AITCS logical program method of giving priority to VIP escort convoy in Point ~~claim~~ 12, during escort from one destination to another, there will be escort bikes or vehicle in the front and at the rear of VIP vehicle.

    AITCS logical program can program to identify which escort vehicle ID in the front and rear. Once the front escort bike or vehicle travel pass any sensor in Point ~~claim~~ 1, AITCS logical program will identify it and turn all traffic direction to red lights and turn on only the escort convoy travelling direction to green light. The AITCS logical program will resume all traffic control to normal once the rear escort bike or vehicle travel pass sensor ES in Point ~~claim~~ 1.

15. AITCS logical program method of shorten driver's waiting time at traffic junction, during low volume traffic condition. In an AITCS junction, when there is no vehicle approaching the junction, all direction traffic lights will be turned to red for safety purposes.
    When a vehicle is approaching an AITCS junction, vehicle A ID is capture by sensors in Point ~~claim~~ 1, AITCS logical program will calculate the time this vehicle A will reach the junction and compare with other direction of traffic.
    If there is no traffic from the other direction, AITCS logical program will turn vehicle A direction traffic light green to let it cross the junction. IF there is another vehicle B approaching from the other direction, AITCS logical program will compare vehicle A&B timing of reaching the junction, if vehicle B time is faster than A than B direction light will turn green first.

    In this method of shorten driver's waiting time at traffic junction AITCS logical program will not turn the lights green for vehicle traveling above speed limit even if the speeding vehicle time is earlier than others. AITCS program will take Point ~~claim~~ 10 and Point ~~claim~~ 11 into action if a speeding vehicle is approaching the junction.

16. AITCS logical program method of controlling any traffic junction condition, by using the shorten driver's waiting time at traffic junction method in Point ~~claim~~ 15 adding in the following features
    a. Maximum waiting time
    b. Priority traffic direction (Point ~~Claim~~ 7)
    c. Maximum number of vehicle to cross the junction

    As the AITCS logical program captured the number of vehicle approaching the traffic junction via the sensor in Point ~~claim~~ 1, AITCS program will know which direction has the most vehicle and the program will turn on the traffic light to green for the heavier traffic direction and uses vehicle count and maximum waiting time to control the regulate traffic situation.

    If both direction has the same number of vehicle approaching or waiting at the traffic junction, priority traffic direction in Point ~~claim~~ 7 will be used to determine which direction to turn green first.

17. AITCS logical program method of controlling any traffic junction condition, by using past traffic statistic and / or captured traffic statistic to control the AITCS junction.

    AITCS has the features to input a recorded statistic of vehicle traveling across the junction in all direction in different timing. AITCS will use this input to auto control the traffic flows during peak hours or during traffic congestion.

    Beside a feature to input a recorded statistic, AITCS logical program can capture the traffic statistic itself and learn from the capture statistic to automatically adjust the traffic timing to the detail level of month, day and time. And AITCS will base on the captured statistic to control the traffic and regulate heavy traffic situation.

18. AITCS logical program method of providing vehicle total travel distance.

For this method, an additional standalone sensors (similar in Point ~~claim~~ 1) and logical program (Point ~~Claim~~ 6) have to be installed in small roads or turns that are not covered by an AITCS traffic junction. The purpose for this standalone sensor is to capture vehicle ID and transmit to a centralised backend program in Point ~~claim~~ 8.

Assuming that all traffic junctions are AITCS junction and the vehicle ID are capture by the sensors at Point ~~claim~~ 1 at every of AITCS junction and transmit to a centralised backend program in Point ~~claim~~ 8

When a sensor capture the vehicle ID it will store in AITCS locate database and transmit to a centralised backend program (Point ~~claim~~ 8) at a prefix interval or time.

With the all the information transmitted to a central location(Point ~~claim~~ 8) Distance from one AITCS junction/standalone sensor to another AITCS junction/standalone sensor are fixed, can be measured and pre-set into the centralised backend program (Point ~~claim~~ 8), thus it could calculate the total distance a vehicle travelled by day/month/year.

This report can be used to track any vehicle or use to calculate total distance travelled per period of time.

Claims

1. A traffic control system for controlling traffic approaching an intersection, the system comprising:

(a) a plurality of sensors placed upstream in the direction of the traffic approaching the intersection, the plurality of sensors for capturing data relating to the traffic;

(b) a traffic light signal unit for controlling the traffic by providing a signal that indicates if traffic is free to pass the intersection; and

(c) a processor for receiving the data from the plurality of sensors and instructing the traffic light signal unit to control the traffic dependent on the data received, wherein

(i) when the data received indicates the absence of traffic, the processor instructs the traffic light signal unit to provide a signal that disallows traffic from passing the intersection;

(ii) when the data received indicates more than one vehicle approaching the intersection from different directions, the processor determines the vehicle that will arrive at the intersection first, and instructs the traffic light signal unit to provide a signal allowing that vehicle priority in passing the intersection; and

(iii) when the data received indicates the priority vehicle exceeds a pre-determined speed, the processor instructs the traffic light signal unit to provide a signal that disallows the priority vehicle from passing the intersection.

2. The system according to claim 1, wherein the plurality of sensors comprising three sensors.

3. The system according to any one of claims 1 or 2, wherein the plurality of sensors are placed below the traffic.

4. The system according to claim 3, further comprising a sensor on each traffic lane on a road having a plurality of traffic lanes.

5. The system according to any one of the preceding claims, further comprising a traffic light sensor for detecting traffic crossing intersection when the traffic light signal unit provides a signal that disallows traffic from passing the intersection.

6. The system according to any one of the preceding claims, further comprising an exit sensor for detecting traffic that passed the intersection.

7. The system according to any one of the preceding claims, wherein the data is any one selected from the group comprising: speed of vehicle, identity of the vehicle, distance of vehicle from the intersection, and number of vehicles approaching the intersection.

8. The system according to any one of the preceding claims, wherein the processor further determines the likelihood of collision between two vehicles approaching the intersection, and instructs the traffic light signal unit to provide a signal that disallows one of the vehicles from passing the intersection.

9. The system according to any one of the preceding claims, wherein the plurality of sensors are adapted to identify an emergency vehicle and the processor instructs the traffic light signal unit to provide a signal allowing the emergency vehicle priority in passing the intersection.

10. The system according to claim 9, wherein the emergency vehicle is any one selected from the group comprising: an ambulance, a fire engine, a police vehicle, and VIP vehicle.

11. The system according to any one of the preceding claims, further comprising a database for storing the data and generating traffic pattern log, wherein the processor instructs the traffic light signal unit to provide a signal for controlling the traffic based on the traffic pattern log.

12. The system according to any one of the preceding claims, further comprising a backup unit.

13. The system according to any one of the preceding claims, wherein the plurality of sensors capturing data from an ID unit located in the vehicle.

14. A method for controlling traffic approaching an intersection, the method comprising:

(a) capturing data relating to the traffic;

(b) processing the data; and

(c) providing a traffic light signal that indicates if traffic is free to pass the intersection, the traffic light signal controls the traffic dependent on the data received, wherein

(i) providing a traffic light signal that disallows traffic from passing the intersection when the data received indicates the absence of traffic;

(ii) when the data received indicates more than one vehicle approaching the intersection from different directions, the method further comprising determining the vehicle that will arrive at the intersection first, and providing a traffic light signal allowing that vehicle priority in passing the intersection; and

(iii) providing a traffic light signal disallows the priority vehicle from passing the intersection when the vehicle exceeds a pre-determined speed.

15. The method according to claim 14, wherein the data captured is the speed of a vehicle, the date is captured by a plurality of sensors comprising three sensors spaced apart upstream in the direction of the traffic approaching the intersection.

16. The method according any one of claims 14 or 15, wherein the plurality of sensors are placed below the traffic.

17. The method according to claim 16, wherein data is captured by a sensor on each traffic lane on a road having a plurality of traffic lanes.

18. The method according to any one of claims 14 to 17, further comprising detecting traffic crossing intersection when the traffic light signal provides a signal that disallows traffic from passing the intersection.

19. The method according to any one of claims 14 to 18, further comprising detecting traffic that passed the intersection.

20. The method according to any one of claims 14 to 19, wherein the data is any one selected from the group comprising: speed of vehicle, identity of the vehicle, distance of vehicle from the intersection, and number of vehicles approaching the intersection.

21. The method according to any one of claims 14 to 20, further comprising determining the likelihood of collision between two vehicles approaching the intersection, and providing a traffic light signal that disallows one of the vehicles from passing the intersection.

22. The method according to any one of claims 14 to 21, further comprising identifying an emergency vehicle and providing a traffic light signal allowing the emergency vehicle priority in passing the intersection.

23. The method according to claim 22, wherein the emergency vehicle is any one selected from the group comprising: an ambulance, a fire engine, a police vehicle, and VIP vehicle.

24. The method according to any one of claims 14 to 23, further comprising storing the data and generating a traffic pattern log, wherein the traffic light signal for controlling the traffic is based on the traffic pattern log.

25. The method according to any one of claims 14 to 24, wherein data is captured from an ID unit located in the vehicle.