

CLAIMS

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 6) is installed and processing all information capture from all sensors from Claim 1. And thus controlling the traffic junction traffic light signals.
3. Traffic light signals control unit. This is an interface unit between the CBU (Claim 2) and traffic light signal.
4. CBU backup Unit, this is an auto fail over system in case the main CBU (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 Claim 1 sensors.
6. AITCS logical program process captured information from 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 Claim 1.

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

- A. Stopping (Speed reduced at different sensor (Claim 1))
- B. Having intention to stop (Speed remain or increasing at different sensor (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 claim 1 detected the vehicle)
- ii. Stopped (after TS sensor from 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 (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 (Claim 9) of vehicle ID to give priority to and when the ID matches the vehicle ID capture from 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 claim 12, is to use a switchable status or vehicle ID for the sensor in 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 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 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 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 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 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 claim 10 and 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 claim 15 adding in the following features

- a. Maximum waiting time
- b. Priority traffic direction (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 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 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 claim 1) and logical program (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 claim 8.

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

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

With the all the information transmitted to a central location (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 (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.