WE CLAIM:

1. An electronic system for switching a driving mode of a vehicle, comprising:

at least one sensor configured to connect to a driving system of the vehicle;

at least one gateway module connected to the at least one sensor through a controller area network; and

processing circuits connected to the at least one gateway module, wherein during operation, the processing circuits are directed to:

receive at least one trigger signal for switching the vehicle from a current driving mode to a target driving mode from the at least one sensor;

receive status signals from the at least one sensor;

determine a status of the vehicle based on the status signals;

transmit a notification to a driver of the vehicle based on the at least one trigger signal and the status of the vehicle;

receive a switch confirmation from the driver in response to the notification, confirming the switching of the vehicle from the current driving mode to the target driving mode; and

generate at least one switching signal to switch the vehicle from the current driving mode to the target driving mode and send the at least one switch signal to the gateway module.

2. The electronic system of claim 1, wherein the current driving mode includes an autonomous driving mode and the target driving mode includes a manual driving mode; or

the current driving mode includes the manual driving mode and the target driving mode includes the autonomous driving mode,

wherein under the autonomous driving mode the vehicle substantially independently determines and executes a navigation strategy without a driver's input.

3. The electronic system of claim 1, wherein the at least one trigger signal is associated with a rotation force of a steering wheel of the vehicle, and

the predetermined condition includes that the rotation force is larger than a first predetermined threshold.

4. The electronic system of claim 3, wherein the at least one sensor includes a touch sensor on the steering wheel of the vehicle to sense a touch on the steering wheel, and

the at least one trigger signal includes at least one signal from the touch sensor.

5. The electronic system of claim 1, wherein the at least one trigger signal is associated with a sensor signal caused by a control action of at least one of a steering wheel of the vehicle, a throttle or a brake pedal of the vehicle; and

the predetermined condition includes that the control action matches a predetermined machine learned reference behavior.

6. The electronic system of claim 1, wherein the switch confirmation includes at least one of a click on a user interface of the vehicle, a press on a button of the vehicle, or a voice command.

7. The electronic system of claim 1, wherein the status of the vehicle includes at least one of remained power, a remained volume of gasoline, a current location of the vehicle, a current speed of the vehicle, a current road condition, or a current

weather condition; and

wherein the processing circuits generate the at least one switching signal only when the status of the vehicle meets a predetermined status.

8. The electronic system of claim 1, wherein the processing circuits are further directed to:

detect occurrence of an emergency to the vehicle;

transmit an emergency notification reporting the emergency to a driver of the vehicle;

receive an emergency switch confirmation that switches the vehicle from an autonomous driving mode to a manual driving mode in response to the emergency notification from the driver; and

determine emergency switch signals that switch the vehicle from the autonomous driving mode to the manual driving mode based on the emergency switch confirmation.

9. A method for switching a driving mode of a vehicle, implemented on an electronic system having at least one sensor configured to connect to a driving system of the vehicle, at least one gateway module connected to the at least one sensor through a controller area network, and processing circuits connected to the at least one gateway module, comprising:

receiving at least one trigger signal for switching the vehicle from a current driving mode to a target driving mode from at least one sensor;

receiving status signals from the at least one sensor;

determining a status of the vehicle based on the status signals;

transmitting a notification to a driver of the vehicle based on the at least one trigger signal and the status of the vehicle;

receiving a switch confirmation from the driver in response to the notification, confirming the switching of the vehicle from the current driving mode to the target driving mode; and

generating at least one switching signal to switch the vehicle from the current driving mode to the target driving mode and send the at least one switch signal to the gateway module.

10. The method of claim 9, wherein the current driving mode includes an autonomous driving mode and the target driving mode includes a manual driving mode; or

the current driving mode includes the manual driving mode and the target driving mode includes the autonomous driving mode,

wherein under the autonomous driving mode the vehicle substantially independently determines and executes a navigation strategy without a driver's input.

11. The method of claim 9, wherein the at least one trigger signal is associated with a rotation force of a steering wheel of the vehicle, and

the predetermined condition includes that the rotation force is larger than a first predetermined threshold.

12. The method of claim 11, wherein the at least one sensor includes a touch sensor on the steering wheel of the vehicle to sense a touch on the steering wheel, and

the at least one trigger signal includes at least one signal from the touch sensor.

13. The method of claim 9, wherein the at least one trigger signal is associated with a sensor signal caused by a control action of at least one of a steering wheel of the vehicle, a throttle or a brake pedal of the vehicle; and

the predetermined condition includes that the control action matches a predetermined machine learned reference behavior.

14. The method of 9, wherein the switch confirmation includes at least one of a click on a user interface of the vehicle, a press on a button of the vehicle, or a voice command.

15. The method of claim 9, wherein the status of the vehicle includes at least one of remained power, a remained volume of gasoline, a current location of the vehicle, a current speed of the vehicle, a current road condition, or a current weather condition; and

wherein the processing circuits generate the at least one switching signal only when the status of the vehicle meets a predetermined status.

16. The method of claim 9, further comprising:

detecting occurrence of an emergency to the vehicle;

transmitting an emergency notification reporting the emergency to a driver of the vehicle;

receiving an emergency switch confirmation that switches the vehicle from an autonomous driving mode to a manual driving mode in response to the emergency notification from the driver; and

determining emergency switch signals that switch the vehicle from the autonomous driving mode to the manual driving mode based on the emergency switch confirmation.

17. A non-transitory computer readable medium comprising instructions for switching a driving mode of a vehicle, wherein during operation, the instructions are configured to cause an electronic system to:

receive at least one trigger signal for switching the vehicle from a current driving mode to a target driving mode from at least one sensor;

receive status signals from the at least one sensor;

determine a status of the vehicle based on the status signals;

transmit a notification to a driver of the vehicle based on the at least one trigger signal and the status of the vehicle;

receive a switch confirmation from the driver in response to the notification, confirming the switching of the vehicle from the current driving mode to the target driving mode; and

generate at least one switching signal to switch the vehicle from the current driving mode to the target driving mode and send the at least one switch signal to the gateway module.

18. The non-transitory computer readable medium of claim 17, wherein the current driving mode includes an autonomous driving mode and the target driving mode includes a manual driving mode; or

the current driving mode includes the manual driving mode and the target driving mode includes the autonomous driving mode,

wherein under the autonomous driving mode the vehicle substantially independently determines and executes a navigation strategy without a driver’s input.