Claims

What is claimed is:

1. A vehicle comprising:

a sensor configured to sense a marking, wherein the marking is at least substantially not visible to the human eye under a natural lighting condition; and

a localization circuit configured to determine a location of the vehicle based on the sensing of the sensor.

2. The vehicle of claim 1,

wherein the marking comprises an engraving with a length in a range between 0.1mm and 100mm, and/ or wherein the marking comprises an engraving with a width in a range between 0.1mm and 100mm.

3. The vehicle of any one of claims 1 to 2,

wherein the marking comprises a chemical substance which is configured to be sensed using chemosensing.

4. The vehicle of any one of claims 1 to 3, further comprising:

a mapping circuit configured to determine a map of an environment of the vehicle.

5. The vehicle of claim 4,

wherein the localization circuit and the mapping circuit are configured to carry out simultaneous localization and mapping.

6. The vehicle of any one of claims 1 to 5, further comprising:

at least one of an actuator,

an actuation controller configured to control actuation of the vehicle based on the determination of the localization circuit, or

a failure detection circuit configured to detect a failure of the vehicle.

7. The vehicle of any one of claims 1 to 6, further comprising:

an exception detection circuit configured to detect an exception in an operation of the vehicle.

8. The vehicle of claim 7, wherein the exception comprises at least one item from the list of items consisting of: the vehicle approaching a crossing; the vehicle standing at a crossing; the vehicle approaching a junction; the vehicle standing at a junction; the vehicle approaching another vehicle; another vehicle approaching the vehicle; an accident; the vehicle approaching a person; and a person approaching the vehicle.

9. The vehicle of any one of claims 1 to 8, further comprising:

a communication circuit configured to communicate with a human operator when an exception is detected.

10. The vehicle of claim 9, wherein the communication circuit is further configured to receive remote control instructions from the human operator.

11. The vehicle of claim 10, wherein the vehicle is configured to operate according to the remote control instructions.

12. The vehicle of claim 10 or claim 11, further comprising:

a learning circuit configured to learn a desired behavior in response to an exception based on the remote control instructions.

13. A vehicle controller system comprising:

a plurality of vehicles, each vehicle of the plurality of vehicles comprising:

a sensor configured to sense a marking, wherein the marking is at least substantially not visible to the human eye under a natural lighting condition; and

a localization circuit configured to determine a location of the vehicle based on the sensing of the sensor; and

a fleet redistribution circuit configured to control each vehicle of the plurality of vehicles based on at least one of a history of usage patterns of the plurality of vehicles or publicly available transportation system information.

14. A vehicle controller system comprising:

a vehicle comprising:

a sensor configured to sense a marking, wherein the marking is at least substantially not visible to the human eye under a natural lighting condition; and

a localization circuit configured to determine a location of the vehicle based on the sensing of the sensor; and

a marking deposition device configured to provide a marking which is at least substantially not visible to the human eye under a natural lighting condition.

15. The vehicle controller system of any one of claims 13 to 14, wherein the marking deposition device comprises at least one of:

an engraving device;

a marking controller configured to control providing of the marking;

a marking quality determination circuit configured to determine a quality of a marking; or

a marking removing member configured to remove an existing marking.

16. A method for controlling a vehicle, the method comprising:

sensing a marking, wherein the marking is at least substantially not visible to the human eye under a natural lighting condition; and

determining a location of the vehicle based on the sensing.

17. The method of claim 16, further comprising at least one of:

actuating the vehicle using an actuator;

controlling actuation of the vehicle based on determining the location; or

detecting a failure of the vehicle.

18. A method for controlling a plurality of vehicles, the method comprising:

controlling a plurality of vehicles, wherein controlling each vehicle of the plurality of vehicles comprises:

sensing a marking, wherein the marking is at least substantially not visible to the human eye under a natural lighting condition; and

determining a location of the vehicle based on the sensing; and

controlling each vehicle of the plurality of vehicles based on at least one of a history of usage patterns of the plurality of vehicles or publicly available transportation system information.

19. The method of any one of claims 16 to 18, further comprising:

providing a marking which is at least substantially not visible to the human eye under a natural lighting condition using a marker deposition device.

20. The method of any one of claims 16 to 19, further comprising:

engraving a marking.