CLAIMS

1. A method of controlling a vehicle in an autonomous driving mode, the method comprising:

receiving, by one or more processors, sensor data identifying a plurality of objects in an external environment of the vehicle;

identifying pairs of objects of the plurality of objects, at least one identified pair of objects including one of a bicyclist, a pedestrian and another vehicle;

determining, by the one or more processors, for ~~each~~the at least one identified pair of objects of the plurality of objects, a similarity value which indicates whether the objects of the at least one identified pair of objects ~~of that identified pair of objects can be responded~~can be reacted to by the vehicle as a group and in a same way;

clustering, by the one or more processors, the objects of the at least one identified pair of objects ~~of one of the identified pairs of objects~~ based on the determined similarity value to form a cluster; and

controlling, by the one or more processors, the vehicle in the autonomous driving mode ~~by responding~~to react to each object in the cluster in ~~a~~the same way.

2. The method of claim 1, wherein the clustering is further based on a distance between the objects of the at least one ~~of the~~ identified pair~~s~~ of objects.

~~3. The method of claim 1, wherein the clustering is further based on a similarity between object types of the objects of the one of the identified pairs of objects.~~

43. The method of claim 1, wherein the clustering is further based on a similarity between past and current motion of the objects of the ~~one of the~~at least one identified pair~~s~~ of objects.

~~5~~4. The method of claim 1, wherein the similarity values are determined further based on a similarity between predicted future motion of the objects of the ~~one of the~~at least one identified pair~~s~~ of objects.

~~6~~5. The method of claim 1, wherein the clustering is further based on a relative location of the objects of the ~~one of the~~at least one identified pair~~s~~ of objects to a feature in ~~an~~the external environment.

~~7~~6. The method of claim ~~6~~5, wherein the feature is a crosswalk.

~~8~~7. The method of claim ~~6~~5, wherein the feature is a bicycle lane.

~~9~~8. The method of claim 1, wherein the clustering is further based on whether one object of the at least one ~~each~~ identified pair of objects appears to be following another object of that identified pair of objects.

~~10~~9. The method of claim 1, wherein the clustering is further based on whether the objects of ~~each~~the at least one identified pair of objects are identified as belonging to a predetermined semantic group.

10. The method of any preceding claim, further comprising detecting a new observation of one of the objects in the cluster, and

determining whether or not the object with the new observation is to be severed from the cluster based on a prior determination if the object had been clustered with another object.

11. The method according to claim 10, further comprising severing the said object with the new observation and clustering the said object with said another object.

~~11~~12. A system for controlling a vehicle in an autonomous driving mode, the system comprising one or more processors configured to:

receive sensor data identifying a plurality of objects in an external environment of the vehicle;

identify pairs of objects of the plurality of objects, at least one identified pair of objects including one of a bicyclist, a pedestrian and another vehicle;

determine, for ~~each~~the at least one identified pair of objects of the plurality of objects, a similarity value which indicates whether the objects of ~~that~~the at least one identified pair of objects can be reacted~~responded~~ to by the vehicle as a group and in a same way;

cluster the objects of ~~one of~~ the at least one identified pair~~s~~ of objects based on the similarity value to form a cluster; and

control the vehicle in the autonomous driving mode to react ~~by responding~~ to each of the objects in the cluster in ~~a~~the same way.

~~12~~13. The system of claim ~~11~~12, wherein the one or more processors are further configured to cluster the objects of the at least one ~~one of the~~ identified pairs of objects further based on a distance between the objects of the ~~one of~~at least one ~~the~~ identified pair~~s~~ of objects.

~~13. The system of claim 11, wherein the one or more processors are further configured to cluster the objects of the one of the identified pairs of objects based on a similarity between object types of the objects of the one of the identified pairs of objects.~~

14. The system of claim ~~11~~12, wherein the one or more processors are further configured to cluster the objects of the ~~one of the~~at least one identified pair~~s~~ of objects further based on a similarity between past and current motion of the objects of ~~each~~the at least one identified pair of objects.

15. The system of claim ~~11~~12, wherein the one or more processors are further configured to cluster the objects of the ~~one of the~~at least one identified pair~~s~~ of objects further based on a similarity between predicted future motion of the objects of the ~~one of the~~at least one identified pair~~s~~ of objects.

16. The system of claim ~~11~~12, wherein the one or more processors are further configured to cluster the objects of the ~~one of the~~at least one identified pair~~s~~ of objects further based on a relative location of the objects of the ~~one of the~~at least one identified pair~~s~~ of objects to a feature in ~~an~~the external environment.

17. The system of claim 16, wherein the feature is a crosswalk.

18. The system of claim ~~11~~12, wherein the one or more processors are further configured to cluster the objects of the ~~one of the~~at least one identified pair~~s~~ of objects further based on whether one object of the ~~objects of the one of the~~at least one identified pair~~s~~ of objects appears to be following another object ~~of the objects of the one of the~~that identified pair~~s~~ of objects.

19. The system of claim ~~11~~12, wherein the one or more processors are further configured to cluster the different type objects of the ~~one of the~~at least one identified pairs of objects further based on whether the different type objects of the ~~one of the~~at least one identified pair of objects are identified as belonging to a predetermined semantic group.

20. The system of claim ~~11~~12, further comprising the vehicle.