CLAIMS:

1. A computer implemented method for evaluating autonomous vehicle safety comprising:

defining criteria for safety of autonomous vehicles in a test space, wherein the criteria for safety includes complexity factor based on a number of lanes for a road on the test space;

dividing the test space into an intended test space and an unintended test space, wherein the intended test space includes characterizations for the autonomous vehicle that can be quantified for said criteria for safety, and the unintended test space includes characterizations that are not quantifiable for said criteria for safety, wherein not quantifiable for said criteria for safety results from unpredictable vehicle behavior resulting from incorrect artificial intelligence that results in performance not consistent with a vehicle's general performance;

measuring the safety of the autonomous vehicles in the intended test space;

combining the unintended test space into the intended test space; and

evaluating the intended test space including a feedback from the unintended test space using a combined simulation of peripheral vehicles and the autonomous vehicles using random criteria for vehicle location, vehicle velocity and vehicle route to provide the evaluation of autonomous vehicle safety.

2. The computer implemented method of claim 1, wherein the criteria for safety of autonomous vehicles includes a measurement of traffic complexity.

3. The computer implemented method of claim 2, wherein measuring the safety of the autonomous vehicles comprises measuring traffic complexity of the peripheral vehicles and the autonomous vehicles on a traffic passageway.

4. The computer implemented method of claim 3, wherein the traffic complexity is a measurement comprising a measurement of a number of pathways on the traffic passageway, a number of moving elements on the traffic passageway, a size of the moving elements on the traffic passageway, distances between the moving elements on the traffic passageway, acceleration/deceleration of the moving elements on the traffic passageway, a measurement of number of changes between the different pathways on the passageway, and complexity of road shape in a unit of time.

5. The computer implemented method of claim 4, wherein a degree of traffic complexity is computed from:

$$\sum_{t\in unitT} flane\ count(t) + \sum_{t\in unitT} fvehicle\ count(t) + \sum_{t\in unitT} vehicle\ sizes(t) + \sum_{t\in unitT} vehicle\ speed\ differential(t) + \sum_{t\in unitT} distance\ between\ vehicles(t) + \sum_{t\in unitT} acceleration/deceleration(t) + \sum_{t\in unitT} lane\ change\ count(t) + \sum_{t\in unitT} topology(t),$$

wherein *t* is a function of time.

6. The computer implemented method of claim 1, wherein the criteria for safety of autonomous vehicles includes a measurement of traffic safety.

7. The computer implemented method of claim 6, wherein measuring the safety of the autonomous vehicles comprises measuring traffic safety of the peripheral vehicles and the autonomous vehicles on a traffic passageway.

8. The computer implemented method of claim 7, wherein the traffic safety is a measurement comprising at least one of a number of collisions of said autonomous vehicles, a number of approaches by the autonomous vehicles to dangerous zones, a number of changes in complexity of traffic and combinations thereof.

9. The computer implemented method of claim 8, wherein the traffic safety is a measurement of degree of traffic safety computed from:

$$\text{Degree of traffic safety (T}-\text{safety)} = \sum_{t\in unitT} fcollisions(t) + \sum_{t\in unitT} f\ approaches\ to\ dangerous\ zones\ (t) + \sum_{t\in unitT} ftraffic\ complexity\ degree\ change(t)$$

wherein *t* is time.

10. The computer implemented method of claim 1, wherein the unintended test space includes software bugs, vehicle performance by artificial intelligence that is outside practical vehicle performance, and when a number of approaching vehicles approach an autonomous vehicle over a calculatable threshold.

11. A system for evaluating autonomous vehicle safety comprising:

a database of criteria for safety of autonomous vehicles in a test space, wherein the criteria for safety includes complexity factor based on a number of lanes for a road on the test space;

a test space analyzer for dividing the test space into an intended test space and an unintended test space, wherein the intended test space includes characterizations for the autonomous vehicles that can be quantified for said criteria for safety, and the unintended test space includes characterizations that are not quantifiable for said criteria for safety, wherein not quantifiable for said criteria for safety results from unpredictable vehicle behavior resulting from incorrect artificial intelligence that results in performance not consistent with a vehicle's general performance;

a safety calculator for the intended test space using at least one hardware processor to measure the safety of the autonomous vehicles in the intended test space according the database of criteria for safety;

a feedback generator for combining the unintended test space into the intended test space; and

a safety evaluator for evaluating the intended test space including a feedback from the unintended test space using a combined simulation of peripheral vehicles and the autonomous vehicles using random criteria for vehicle location, vehicle velocity and vehicle route to provide the evaluation of autonomous vehicle safety.

12. The system of claim 11, wherein the criteria for safety of autonomous vehicles includes at least one of a traffic criteria for traffic complexity and a safety criteria for traffic safety.

13. The system method of claim 12, wherein the safety calculator measures the safety of the autonomous vehicles by measuring at least one of the traffic complexity of the peripheral vehicles and the autonomous vehicles on the traffic passageway and the traffic safety of the peripheral vehicles and the autonomous vehicles on the traffic passageway.

14. The system of claim 13, wherein the traffic complexity is a measurement comprising a measurement of a number of pathways on the traffic passageway, a number of moving elements on the traffic passageway, a size of the moving elements on the traffic passageway, distances between the moving elements on the traffic passageway, acceleration/deceleration of the

moving elements on the traffic passageway, a measurement of number of changes between the different pathways on the passageway, and complexity of road shape in a unit of time.

15. The system of claim 13, wherein the safety calculator measures the safety of the autonomous vehicles by measuring traffic safety of the peripheral vehicles and the autonomous vehicles on a traffic passageway.

16. The system of claim 12, wherein the traffic safety is a measurement comprising at least one of a number of collisions of said autonomous vehicles, a number of approaches by the autonomous vehicles to dangerous zones, a number of changes in complexity of traffic and combinations thereof.

17. The system of claim 12, wherein the unintended test space includes software bugs, vehicle performance by artificial intelligence that is outside practical vehicle performance, and when a number of approaching vehicles approach an autonomous vehicle over a calculatable threshold.

18. A computer program product for evaluating autonomous vehicle safety, the computer program product comprising a computer readable storage medium having program instructions embodied therewith, the program instructions executable by a processor to cause the processor to:

define criteria, using the processor, for safety of autonomous vehicles in a test space, wherein the criteria for safety includes complexity factor based on a number of lanes for a road on the test space;

divide, using the processor, the test space into an intended test space and an unintended test space, wherein the intended test space includes characterizations for the autonomous vehicle that can be quantified for said criteria for safety, and the unintended test space includes characterizations that are not quantifiable for said criteria for safety, wherein not quantifiable for said criteria for safety results from unpredictable vehicle behavior resulting from incorrect artificial intelligence that results in performance not consistent with a vehicle's general performance;

measure, using the processor, the safety of the autonomous vehicles in the intended test space;

combine, using the processor, the unintended test space into the intended test space; and

evaluate, using the processor, the intended test space including a feedback from the unintended test space using a combined simulation of peripheral vehicles and the autonomous vehicles using random criteria for vehicle location, vehicle velocity and vehicle route to provide the evaluation of autonomous vehicle safety.

19. The computer program product of claim 18, wherein said measure using the processor of the safety of the autonomous vehicles comprises a measurement of at least one of traffic complexity of the peripheral vehicles and the autonomous vehicles on the traffic passageway, and traffic safety of the peripheral vehicles and the autonomous vehicles on the traffic passageway.