CLAIMS

1. A method for controlling a collision velocity, comprising:

obtaining a target parameter, wherein the target parameter comprises an environmental parameter and test data corresponding to different environmental conditions;

determining a vehicle motion mathematical model and a preset neural network based on the target parameter; and

determining a decoupling position and a decoupling velocity of a test vehicle by inputting an expected collision velocity into the vehicle motion mathematical model or the preset neural network;

wherein the test data corresponding to different environmental conditions comprises a real-time position, a velocity, an acceleration, a collision velocity, and a collision stress of both a driving locomotive and a test vehicle; and wherein determining the preset neural network based on the target parameter comprises:

training the preset neural network based on the real-time position, the velocity, the acceleration, the collision velocity, and the collision stress of the test vehicle; and

testing the preset neural network based on the real-time position, the velocity, the acceleration, the collision velocity, and the collision stress of both the driving locomotive and the test vehicle.

2. The method for controlling a collision velocity according to claim 1, wherein the environmental parameter comprises a wind speed, a wind direction, a velocity of a test vehicle, a weight of the test vehicle, a counterweight, a rail moisture level, and a rail cleanliness; and wherein determining the vehicle motion mathematical model based on the target parameter comprises:

creating a wind resistance model based on the wind speed, the wind direction, and the velocity of the test vehicle, wherein an air resistance is outputted by the wind resistance model;

creating a wheel-rail adhesion model based on the weight of the test vehicle, the counterweight, the rail moisture level, and the rail cleanliness, wherein a wheel-rail adhesive resistance is outputted by the wheel-rail adhesion model;

creating a single-vehicle motion control model and a grouped-vehicle motion control module based on the air resistance, the wheel-rail adhesive resistance, and a tractive force, wherein a target velocity and a target acceleration of a single-vehicle are outputted by the single-vehicle motion control model, and a target velocity and a target acceleration of a grouped-vehicle are outputted by the grouped-vehicle motion control model; and

determining the wind resistance model, the wheel-rail adhesion model, the single-vehicle motion control model, and the grouped-vehicle motion control module as the vehicle motion mathematical model.

3. The method for controlling a collision velocity according to claim 2, further comprising:

obtaining an actual acceleration of the test vehicle; and

correcting the single-vehicle motion control model and the grouped-vehicle motion control model based on the actual acceleration, the target acceleration of a single-vehicle, and the target acceleration of a grouped-vehicle.

4. A device for controlling a collision velocity, comprising:

a first obtaining module, configured to obtain a target parameter, wherein the target parameter comprises an environmental parameter and test data corresponding to different environmental conditions;

a first determination module, configured to determine a vehicle motion mathematical model and a preset neural network based on the target parameter; and

a second determination module, configured to determine a decoupling position and a decoupling velocity of a test vehicle by inputting an expected collision velocity into the vehicle motion mathematical model or the preset neural network;

wherein the test data corresponding to different environmental conditions comprises a real-time position, a velocity, an acceleration, a collision velocity, and a collision stress of both a driving locomotive and a test vehicle; and wherein the first determination module further comprises:

a training unit, configured to train the preset neural network based on the real-time position, the velocity, the acceleration, the collision velocity, and the collision stress of the test vehicle; and

a test unit, configured to test the preset neural network based on the real-time position, the velocity, the acceleration, the collision velocity, and the collision stress of both the driving locomotive and the test vehicle.

5. The device for controlling a collision velocity according to claim 5, wherein the environmental parameter comprises a wind speed, a wind direction, a velocity of a test vehicle, a weight of the test vehicle, a counterweight, a rail moisture level, and a rail cleanliness; and wherein the first determination module comprises:

a first creating unit, configured to create a wind resistance model based on the wind speed, the wind direction, and the velocity of the test vehicle, wherein an air resistance is outputted by the wind resistance model;

a second creating unit, configured to create a wheel-rail adhesion model based on the weight of the test vehicle, the counterweight, the rail moisture level, and the rail cleanliness, wherein a wheel-rail adhesive resistance is outputted by the wheel-rail adhesion model;

a third creating unit, configured to create a single-vehicle motion control model and a grouped-vehicle motion control module based on the air resistance, the wheel-rail adhesive resistance, and a tractive force, wherein a target velocity and a target acceleration of a single-vehicle are outputted by the single-vehicle motion control model, and a target velocity and a target acceleration of a grouped-vehicle are outputted by the grouped-vehicle motion control model; and

a determination unit, configured to determine the wind resistance model, the wheel-rail adhesion model, the single-vehicle motion control model, and the grouped-vehicle motion

control module as the vehicle motion mathematical model.

6. The device for controlling a collision velocity according to claim 6, further comprising:

a second obtaining module, configured to obtain an actual acceleration of the test vehicle; and

a correction module, configured to correct the single-vehicle motion control model and the grouped-vehicle motion control model based on the actual acceleration, the target acceleration of a single-vehicle, and the target acceleration of a grouped-vehicle.

7. A storage medium comprising a program, wherein the program, when executed, controls a device where the storage medium is located to perform the method for controlling a collision velocity according to any one of claims 1 to 3.

8. An electronic device comprising at least one processor, at least one memory connected to the processor, and a bus; wherein the processor and the memory communicate with each other through the bus, and the processor is configured to call a program instruction stored in the memory to perform the method for controlling a collision velocity according to any one of claims 1 to 3.