recorder and a digital tachograph, sensors, cameras, position measuring instruments, and the like mounted on the vehicle, and may include information such as a vehicle speed (maximum, minimum, average, variance), vehicle acceleration, vehicle deceleration, a rotation speed of a vehicle driving power source, a vehicle direction change amount, and the like. The operator data is, for example, data held by an operator, such as a transport company or bus company, and may include information such as an operator ID, a vehicle ID, a driver ID, attendance, vehicle interior and exterior videos, driver's vital signs, and the like. The accident statistics data is, for example, data held by a damage insurance company, and may include information such as an accident occurrence operator ID, an accident occurrence vehicle ID, date and time of an accident, the latitude and longitude of accident occurrence, an accident type, the amount of damage, and the like. The external data is, for example, be data held by other external devices or databases, and may include information such as maps (road type, building/facility type), traffic congestion, weather, human flow distribution/population density, and the like.

[0032] The preprocessing performed by the preprocessing portion 41 on raw data D0 includes a process of collecting and combining the raw data D0, a process of extracting feature group data D1, such as a first feature D11, a second feature D12, a third feature D13, and a fourth feature D14, from the raw data D0 and quantifying them as explanatory variables, a process of extracting accident data D2 from the raw data D0 and quantifying it as objective variables, and a process of associating the quantified feature group data D1 with the quantified accident data D2 and combining them together.

CLAIMS

1. A vehicle accident prediction system comprising:

a preprocessing portion that obtains a training data set containing feature group data including a first feature representing an attribute of a driver of a vehicle, a second feature representing a state of the vehicle, and a third feature combining a plurality of the second features, and accident data relating to an accident of the vehicle;

a model creation portion that creates, through learning, a learned model that predicts an accident of the vehicle from the feature group data using a plurality of the training data sets obtained by the preprocessing portion;

a prediction target input portion that inputs the feature group data that is to be a prediction target; and

a prediction portion that predicts an accident of the vehicle from the feature group data input by the prediction target input portion using the learned model created by the model creation portion.

2. The vehicle accident prediction system according to claim 1, wherein

the first feature includes values quantifying at least one of number of days the driver has been with an operator managing the vehicle, a past traveling distance/time of the driver, on-duty hours of the driver in a predetermined past period, and number of days elapsed since the driver's last service date.

3. The vehicle accident prediction system according to claim 1 or 2, wherein

the third feature includes values quantifying at least one of acceleration distribution in each speed range of the

vehicle, deceleration distribution in each speed range of the vehicle, average acceleration and deceleration time in each speed range of the vehicle, direction change amount distribution in each speed range of the vehicle, direction change time in each speed range of the vehicle, distribution of rotation speed of the driving power source in each acceleration range of the vehicle, and direction change amount distribution in each deceleration range of the vehicle.

4. The vehicle accident prediction system according to any one of claims 1 to 3,

Wherein the feature group data includes a fourth feature representing a driving scene of the vehicle, and

the fourth feature includes values quantifying at least one of a driving scene in a time period when traffic is heavy, a driving scene after a break, a driving scene in which the vehicle is behind a predicted arrival time at a destination, a driving scene in which the vehicle is entering a narrow alley, and a driving scene in rough weather.

5. A vehicle accident prediction method comprising:

a step of obtaining a training data set containing feature group data including a first feature representing an attribute of a driver of a vehicle, a second feature representing a state of the vehicle, and a third feature combining a plurality of the second features, and accident data relating to an accident of the vehicle;

a step of creating, through learning, a learned model that predicts an accident of the vehicle from the feature group data using a plurality of the obtained training data sets;

a step of inputting the feature group data that is to be a prediction target; and

a step of predicting an accident of the vehicle from the input feature group data using the created learned model.

6. A vehicle accident prediction program for causing a computer to perform operations comprising:

obtaining a training data set containing feature group data including a first feature representing an attribute of a driver of a vehicle, a second feature representing a state of the vehicle, and a third feature combining a plurality of the second features, and accident data relating to an accident of the vehicle;

creating, through learning, a learned model that predicts an accident of the vehicle from the feature group data using a plurality of the obtained training data sets;

inputting the feature group data that is to be a prediction target; and

predicting an accident of the vehicle from the input feature group data using the created learned model.

7. A learned model creation system comprising:

a preprocessing portion that obtains a training data set containing feature group data including a first feature representing an attribute of a driver of a vehicle, a second feature representing a state of the vehicle, and a third feature combining a plurality of the second features, and accident data relating to an accident of the vehicle; and

a model creation portion that creates, through learning, a learned model that predicts an accident of the vehicle from the feature group data using a plurality of

the training data sets obtained by the preprocessing portion.