DRIVING INTENTION RECOGNITION METHOD, APPARATUS, DEVICE, AND MEDIUM

[0001] This application claims priority to Chinese Patent Application No. 202510148419.X filed with the China National Intellectual Property Administration (CNIPA) on Feb. 11, 2025, the disclosure of which is incorporated herein by reference in its entirety.

TECHNICAL FIELD

[0002] The present application relates to the field of intelligent driving technology, for example, to a driving intention recognition method, apparatus, device, and medium.

BACKGROUND

[0003] With the development of automobile intelligence and autonomous driving technology, the interactions between vehicles and drivers are becoming more and more complex. Among them, intention recognition, as one of the core technologies in intelligent automobile systems, plays a vital role.

[0004] Conventional intention recognition methods usually require long-term training and debugging, and often face problems such as complex data processing and inaccurate feature extraction, which leads to slow system response and poor user experience. Therefore, most of the related intention recognition methods have problems such as insufficient accuracy, low processing efficiency, and a long development cycle, which seriously affect the performance and user experience of intelligent automobile systems.

SUMMARY

[0005] A driving intention recognition method is provided according to the present application, which is applied to a driving intention recognition system, and includes as following.

[0006] A pre-processing module of the driving intention recognition system acquires original driving data of a vehicle, and performs data processing in a set mode on the original driving data, to obtain target driving features.

[0007] An inference module of the driving intention recognition system performs intention recognition on the target driving features to obtain a driver's intention recognition result.

[0008] A post-processing module of the driving intention recognition system corrects the intention recognition result to obtain a target intention recognition result.

[0009] A driving intention recognition system is provided according to the present application, which includes: a pre-processing module, an inference module, and a post-processing module.

[0010] The pre-processing module is configured to acquire original driving data of a vehicle and perform data processing in a set mode on the original driving data to obtain target driving features.

[0011] The inference module is configured to perform intention recognition on the target driving features to obtain a driver's intention recognition result.

[0012] The post-processing module is configured to correct the intention recognition result to obtain a target intention recognition result.

[0013] An electronic device is provided according to the present application, which includes:

[0014] at least one processor; and

[0015] a memory connected to the at least one processor in communication.

[0016] The memory stores a computer program executable by the at least one processor, the computer program being executed by the at least one processor so that the at least one processor can execute the driving intention recognition method according to any embodiment of the present application.

[0017] A computer-readable storage medium is provided according to the present application, which stores a computer instruction. The computer instruction is configured to cause a processor, when executing the computer instruction, to implement the driving intention recognition method according to any embodiment of the present application.

BRIEF DESCRIPTION OF DRAWINGS

[0018] FIG. 1 is a flow chart of a driving intention recognition method provided according to an embodiment of the present application;

[0019] FIG. 2 is a flow chart of a driving intention recognition method provided according to an embodiment of the present application;

[0020] FIG. 3 is a schematic structural diagram of a driving intention recognition system provided according to an embodiment of the present application; and

[0021] FIG. 4 is a schematic structural diagram of an electronic device provided according to an embodiment of the present application.

DETAILED DESCRIPTION

[0022] The terms "first", "second", and "target" in the specification and claims of the present application and the above-mentioned drawings are used to distinguish similar objects and are not necessarily used to describe a specific order or sequence. It should be understood that the data used in this way can be interchanged where appropriate, so that the embodiments of the

present application described herein can be implemented in an order other than those illustrated or described herein. In addition, the terms "including" and "having" and any variations thereof are intended to cover non-exclusive inclusions, for example, the processes, methods, systems, products or devices, in addition to including a series of steps or units shown in the embodiments of the present application, may further include other steps or units that are not listed, or include other steps or units inherent to these processes, methods, systems, products or devices.

[0023] FIG. 1 is a flow chart of a driving intention recognition method provided according to an embodiment of the present application. This embodiment can be applied to the situation where the driver's intention is recognized during the intelligent driving of a vehicle. The method can be executed by a driving intention recognition system that can be implemented in the form of hardware and/or software. The driving intention recognition system can be configured in an electronic device with data processing capabilities. As shown in FIG. 1, the method includes: S110 to S130 as follows.

[0024] The driving intention recognition method described in this embodiment is applied to a driving intention recognition system, and the driving intention recognition system includes a pre-processing module, an inference module, and a post-processing module. The pre-processing module and the post-processing module in this embodiment can be considered as model pre-processing and post-processing processes. In the pre-processing module in this embodiment, accurate feature extraction can be performed on input data in the automotive field. The main goal of the pre-processing module is to convert the original input data (such as the driver's voice command or driving behavior data) into a high-quality, structured feature vector, so that the subsequent reasoning process is more efficient and accurate. In the inference module of this embodiment, a method combining deep learning and machine learning is

adopted, and the driver's intention is recognized and classified in conjunction with the features extracted by the pre-processing module. The function of the post-processing module in this embodiment is to intelligently optimize the output results based on intention recognition. The post-processing module ensures the accuracy and practical applicability of the recognition results by further processing the recognition results.

[0025] In S110, the pre-processing module of the driving intention recognition system acquires original driving data of a vehicle, and performs data processing in a set mode on the original driving data to obtain target driving features.

[0026] The vehicle can be a vehicle being intelligently driven currently. The original driving data may be considered as vehicle driving data acquired in the process of vehicle driving. The original driving data may include the driver's behavior data and the vehicle driving state data. Exemplarily, in this embodiment, the driving intention recognition system can acquire, from the vehicle's sensors and a voice recognition module, the original driving data, such as the driver's voice commands, vehicle driving state, and driver behavior data. The data processing in a set mode may include a pre-processing operation on the features, a feature extraction operation, feature selection, data dimension reduction processing, and other processing modes, and processing in a set mode may also be performed on the features according to practical requirements. The target driving features can be considered as the final driving feature obtained after the data processing in the set mode.

[0027] In this embodiment, the pre-processing module acquires the driver's behavior data and vehicle driving state data in the sensor and voice recognition module of the current intelligent driving vehicle, and performs a data pre-processing operation, a feature extraction operation, feature selection and data dimension reduction processing on the driver's behavior data and vehicle driving state data to obtain a processed driving feature, that is, the target

driving features.

[0028] In S120, the inference module of the driving intention recognition system performs intention recognition on the target driving features to obtain a driver's intention recognition result.

[0029] Intention recognition can be considered as an operation to recognize the driver's intention according to the target driving features. In this embodiment, the inference module may include an intention recognition model that is set to recognize the driver's driving intention. The intention recognition model in this embodiment may be a pre-trained neural network model. The intention recognition result may be the driver's intention recognition result recognized with the target driving features. In this embodiment, the target driving features is processed by using the intention recognition model in the inference module for intention recognition, thereby obtaining the corresponding intention recognition result.

[0030] In S130, the post-processing module of the driving intention recognition system corrects the intention recognition result to obtain a target intention recognition result.

[0031] The correction can be an operation to adjust and optimize the intention recognition result. The target intention recognition result can be the final intention recognition result obtained after adjusting or optimizing the intention recognition result. There can be one or more intention recognition results in this embodiment. In this embodiment, the intention recognition result can be adjusted and optimized based on the information, such as pre-set business rules contained in the post-processing module, to obtain a target intention recognition result.

[0032] In the technical solution of the embodiment of the present application, the pre-processing module obtains the original driving data of the vehicle, performs data processing in a set mode on the original driving data to obtain target driving features; the inference module

performs intention recognition on the target driving features to obtain a driver's intention recognition result; the post-processing module corrects the intention recognition result to obtain a target intention recognition result. With this technical solution, through the optimized processing flow of the pre-processing module and the post-processing module, the key driving feature can be quickly and accurately extracted, redundant information is reduced, the accuracy of the model is improved, and the reliability of the intention recognition result is further improved.

[0033] FIG. 2 is a flow chart of a driving intention recognition method provided according to an embodiment of the present application, and in this embodiment, optimization is performed based on the above embodiment. The specific optimization is as follows: the data processing in a set mode includes pre-processing, feature extraction and data dimension reduction processing; accordingly, the operation of the pre-processing module acquiring the original driving data of the vehicle and performing data processing in the set mode on the original driving data to obtain target driving features includes: the pre-processing module acquiring the original driving data of the vehicle and pre-processing the original driving data to obtain pre-processed driving data; performing feature extraction on the pre-processed driving data to obtain driving feature data; and performing data dimension reduction processing on the driving feature data to obtain target driving features. As shown in FIG. 2, the method includes: S210 to S250.

[0034] The driving intention recognition method in this embodiment is applied to a driving intention recognition system that includes a pre-processing module, an inference module, and a post-processing module.

[0035] In S210, the pre-processing module of the driving intention recognition system acquires original driving data of a vehicle, pre-processes the original driving data to obtain

pre-processed driving data.

[0036] The pre-processing may include a data cleaning process and a standardization process. The data cleaning process may include data cleaning and data denoising processing. In this embodiment, the pre-processing module acquires original driving data of the vehicle, then performs data cleaning and data denoising processing on the original driving data to remove irrelevant information, and standardizes the driving data obtained after data cleaning and data denoising processing to obtain pre-processed driving data. In this embodiment, the standardization process can ensure that the data is in the same dimension to facilitate subsequent data processing operations.

[0037] In this embodiment, optionally, the operation of the pre-processing the original driving data to obtain pre-processed driving data includes: performing data cleaning on the original driving data to obtain cleaned driving data; and performing a standardization process on the cleaned driving data to obtain pre-processed driving data.

[0038] The data cleaning process includes processing such as removing duplicate records, filling missing values, and correcting erroneous data. The cleaned driving data can be considered as the driving data obtained after removing duplicate records, filling missing values, and correcting erroneous data. The standardization process can be considered as processing the cleaned driving data in a preset standard format.

[0039] In this embodiment, the original driving data can be processed by removing duplicate records, filling missing values, and correcting erroneous data to obtain cleaned driving data, and then the cleaned driving data is converted from the original format into a preset standard data format to obtain pre-processed driving data.

[0040] In this embodiment, through such a setting, the original driving data can be pre-processed so that the driving data can maintain a consistent data format, which helps to

eliminate the scale differences between different features and makes it easier to learn and understand the data during subsequent model processing.

[0041] In S220, feature extraction is performed on the pre-processed driving data to obtain driving feature data.

[0042] The feature extraction can be the extraction of key vehicle feature data from the pre-processed driving data. In this embodiment, feature extraction can be performed by a feature extraction model or other machine learning methods. Driving feature data can be considered as feature data obtained by extracting key features from the pre-processed driving data.

[0043] In this embodiment, key features can be extracted from the pre-processed driving data through specific automotive field knowledge. For example, for driving voice data, feature data such as voice patterns or spectral features of audio are extracted; and for driving behavior data, feature data such as the driver's driving habits or the vehicle's motion trajectory are extracted.

[0044] In S230, data dimension reduction processing is performed on the driving feature data to obtain target driving features.

[0045] The data dimension reduction processing can be considered as a processing operation to reduce the data dimension of the driving feature data. The target driving features can be considered as the feature data obtained after the data dimension reduction processing. In this embodiment, data dimension reduction processing can be performed on the driving feature data by setting a dimension reduction algorithm to obtain the processed target driving features.

[0046] In this embodiment, optionally, the data dimension reduction processing being performed on the driving feature data to obtain target driving features includes: performing feature selection on the driving feature data by using a set feature selection algorithm to obtain

selected driving features; and performing dimension reduction processing on the selected driving features by using a data dimension reduction algorithm to obtain target driving features.

[0047] The set feature selection algorithm can be an algorithm for selecting features. The set feature selection algorithm in this embodiment can be any algorithm that can select features, and the embodiment does not limit this. In this embodiment, the required feature types can be pre-set, for example, some feature scenes can be pre-set, or the features to be identified can be selected according to some personal information features, so as to select the driving feature that meets the preset feature type according to the feature selection algorithm. The data dimension reduction algorithm may be an algorithm for reducing the dimension of data. Exemplarily, in this embodiment, the data dimension reduction algorithm may be a principal component analysis (PCA) algorithm, or a linear discriminant analysis (LDA) algorithm, etc. The data dimension reduction algorithm in this embodiment may be any algorithm that can reduce the dimension of data, and the embodiment does not limit this.

[0048] In this embodiment, feature selection may be performed on the driving feature data by using a set feature selection algorithm, to retain the features that best represent the driver's intention as the selected driving features, and then dimension reduction processing is performed on the selected driving features by using a data dimension reduction algorithm (such as PCA) to obtain the final target driving features.

[0049] In this embodiment, by such a setting, the driving data is processed by a feature selection algorithm and a data dimension reduction algorithm, so that the required key feature type can be retained, the data dimension can be lowered, and the computational complexity can be decreased.

[0050] In S240, the inference module of the driving intention recognition system performs intention recognition on the target driving features to obtain a driver's intention recognition

result.

[0051] In this embodiment, optionally, the operation of the inference module performing intention recognition on the driving feature vector to obtain a driver's intention recognition result includes: calling an intention recognition model in the inference module; and inputting the target driving features into the intention recognition model to obtain a driver's intention recognition result.

[0052] The intention recognition model can be a pre-trained deep neural network model. The intention recognition model in this embodiment can be a long short-term memory (LSTM) network model or a transformer model. The intention recognition result can be a result such as navigation, window control, or volume adjustment.

[0053] In this embodiment, the inference module calls the included intention recognition model, then inputs the target driving features into the intention recognition model, and performs an intention recognition operation on the target driving features through the intention recognition model to obtain a driver's intention recognition result.

[0054] Further, in the training stage of the intention recognition model, an initial intention recognition model can be trained by using the extracted feature vector samples and trained through large-scale labeled data, to learn the driver's behavior patterns to obtain the target intention model that finally meets the requirements.

[0055] In this embodiment, through such a setting, the driver's intention is recognized by the method of combining deep learning and machine learning in conjunction with the features extracted by the pre-processing module, so as to improve the accuracy and reliability of intention recognition.

[0056] Furthermore, in this embodiment, in a case where multiple intention recognition results exist, the intention recognition results may be further classified. In this embodiment,

the classification can be performed according to the intention recognition task or the scene where the intention recognition is located, or according to other situations, and can be set according to practical requirements. Exemplarily, the classification based on the intention recognition task may include driving behavior recognition, vehicle-mounted interactive intention, and a driving assistance system. The classification based on the scene where the intention recognition is located may include urban road driving, highway driving, parking lot operation, and bad weather driving. In this embodiment, the intention recognition results obtained by recognition can be classified into corresponding types according to the pre-set intention recognition types.

[0057] In S250, the post-processing module of the driving intention recognition system corrects the intention recognition result to obtain a target intention recognition result.

[0058] In this embodiment, optionally, the operation of the post-processing module correcting the intention recognition result to obtain a target intention recognition result includes: calling set business rules in the post-processing module; and correcting the intention recognition result according to the set business rules to obtain a target intention recognition result.

[0059] The set business rules can be pre-set business rules. In this embodiment, the business rules can be set according to the specific business scenes preset for the intention recognition, and can be set according to practical requirements. Exemplarily, in this embodiment, business rules can be pre-set based on driver experience and road traffic rules. For example, when driving on a highway, the driver usually does not intend to make a sharp turn; when a red light comes on, the driver usually intends to stop, etc. When the intention recognition result does not match the set business rules, the intention recognition result can be corrected according to the set business rules to obtain the target intention recognition result.

[0060] In this embodiment, the set business rules stored in the post-processing module can be called, and the intention recognition result can be corrected according to the set business rules and context information to obtain the target intention recognition result. Exemplarily, if the driver says "turn down the volume", but the voice recognition mistakenly recognizes it as "turn up the volume", the post-processing module can automatically correct it in conjunction with context information (such as the current volume level), so that the final target intention recognition result obtained is "turn down the volume".

[0061] In this embodiment, through such a setting, the intention recognition result can be corrected and optimized based on the pre-set business rules, so as to obtain the final intention recognition result, thereby further improving the accuracy of intention recognition.

[0062] In this embodiment, optionally, the operation of obtaining a target intention recognition result includes: when multiple intention recognition results exist, acquiring priorities corresponding to the multiple intention recognition results; screening the multiple intention recognition results according to the priorities corresponding to the multiple intention recognition results to obtain a target intention recognition result.

[0063] The priority can be the corresponding priority obtained by scoring the intention recognition result according to a preset scoring coefficient. One or more intention recognition results may exist in this embodiment. When multiple intention recognition results exist, the priorities corresponding to the intention recognition results can be determined. The priorities in this embodiment can be the corresponding priorities determined according to scoring coefficients of multiple intention recognition results set in advance.

[0064] In this embodiment, for the multiple intention recognition results recognized, the post-processing module determines the priorities or confidences corresponding to the intention recognition results according to the preset scoring coefficients, and then screens the multiple

intention recognition results according to the priorities or confidences corresponding to the intention recognition results to obtain the target intention recognition result to ensure that the output result meets the practical requirements. In this embodiment, when multiple intention recognition results are screened according to the priorities corresponding to the intention recognition results, the multiple intention recognition results can be sorted from high to low according to the priorities, and the one with the highest priority can be considered as the optimal intention recognition result, that is, as the target intention recognition result.

[0065] In this embodiment, through such a setting, the multiple intention recognition results can be screened according to their priorities to determine the target intention recognition result, thereby optimizing the recognition result and improving the accuracy of intention recognition.

[0066] In this embodiment, the pre-processing module can convert the messy input data into a structured and efficient feature vector, providing accurate input for the subsequent reasoning process; the inference module adopts a method combining deep learning and machine learning, in conjunction with the features extracted by the pre-processing module, to recognize the driver's intention; the post-processing module intelligently optimizes the output results based on intention recognition; and through further processing of the recognition results, the accuracy and practical applicability of the intention recognition results are ensured. In this embodiment, through the optimized pre-processing process, key features can be quickly and accurately extracted from the voice and behavior data in the automotive field, reducing redundant information and improving the accuracy of the model; and through the intelligent post-processing module, the recognition results can be further optimized, so that the output results are more in line with actual needs, further improving the reliability and application effect of the intention recognition system. Moreover, through the optimization of pre- and post-processing, the development cycle of the intention recognition system can be greatly

shortened, so that developers can complete the construction and iteration of the system more quickly, thereby accelerating the promotion and popularization of applications in the field of intelligent automobiles, helping enterprises to respond to user needs more quickly in the fiercely competitive market and improve market competitiveness. In this embodiment, the issues of low efficiency, poor accuracy, and long development cycle in conventional methods are addressed through the pre-processing and post-processing flow of intention recognition in the automotive field, and the intention recognition task in the automotive field can be quickly and efficiently processed, and the recognition accuracy and system response speed can be greatly improved.

[0067] With the technical solution of the embodiment of the present application, the pre-processing module obtains original driving data of a vehicle, and pre-processes the original driving data, to obtain pre-processed driving data, performs feature extraction on the pre-processed driving data to obtain driving feature data, and performs data dimension reduction processing on the driving feature data to obtain target driving features; the inference module performs intention recognition on the target driving features to obtain a driver's intention recognition result; and the post-processing module corrects the intention recognition result to obtain a target intention recognition result. In this technical solution, driving key features can be quickly and accurately extracted through the optimized processing flow of the pre-processing module and the post-processing module, so that redundant information is reduced, the accuracy of the model is improved, and the reliability of the intention recognition result is further improved.

[0068] FIG. 3 is a schematic structural diagram of a driving intention recognition system provided according to an embodiment of the present application. As shown in FIG. 3, the driving intention recognition system includes: a pre-processing module 310, an inference

module 320, and a post-processing module 330.

[0069] The pre-processing module 310 is configured to acquire original driving data of a vehicle, perform data processing in a set mode on the original driving data to obtain target driving features.

[0070] The inference module 320 is configured to perform intention recognition on the target driving features to obtain a driver's intention recognition result.

[0071] The post-processing module 330 is configured to correct the intention recognition result to obtain a target intention recognition result.

[0072] Optionally, the data processing in a set mode includes pre-processing, feature extraction, and data dimension reduction processing.

[0073] Accordingly, the pre-processing module 310 includes: a pre-processing unit, a feature extraction unit, and a dimension reduction processing unit.

[0074] The pre-processing unit is configured to acquire original driving data of a vehicle, perform pre-processing on the original driving data to obtain pre-processed driving data.

[0075] The feature extraction unit is configured to perform feature extraction on the pre-processed driving data to obtain driving feature data.

[0076] The dimension reduction processing unit is configured to perform data dimension reduction processing on the driving feature data to obtain target driving features.

[0077] Optionally, the dimension reduction processing unit is specifically configured to: perform feature selection on the driving feature data by using a set feature selection algorithm to obtain selected driving features; and perform dimension reduction processing on the selected driving features by a data dimension reduction algorithm to obtain target driving features.

[0078] Optionally, the pre-processing unit is specifically configured to: perform data

cleaning on the original driving data to obtain cleaned driving data; and perform a standardization process on the cleaned driving data to obtain pre-processed driving data.

[0079] Optionally, the inference module 320 is specifically configured to: call an intention recognition model in the inference module; and input the target driving features into the intention recognition model to obtain a driver's intention recognition result.

[0080] Optionally, the post-processing module 330 is specifically configured to: call set business rules in the post-processing module; and correct the intention recognition result according to the set business rules to obtain a target intention recognition result.

[0081] Optionally, the post-processing module of the system further includes: a screening unit configured to, when multiple intention recognition results exist, acquire priorities corresponding to the multiple intention recognition results; and screen the multiple intention recognition results according to the priorities corresponding to the multiple intention recognition results to obtain a target intention recognition result.

[0082] The driving intention recognition system provided in an embodiment of the present application can execute the driving intention recognition method provided in any embodiment of the present application, has corresponding functional modules for executing the method, and can achieve beneficial effects corresponding to those achieved by executing the method.

[0083] FIG. 4 shows a schematic structural diagram of an electronic device provided according to an embodiment of the present application. It is intended to use electronic device 10 to represent various forms of digital computers, such as laptops, desktops, workstations, personal digital assistants, servers, blade servers, mainframes, and other suitable computers. Electronic devices may further represent various forms of mobile devices, such as personal digital assistants, cellular phones, smartphones, wearable devices (e.g., helmets, glasses, watches, etc.), and other similar computing devices. The components shown herein, their

connections and relationships, and their functions, are used as examples only, and are not intended to limit implementations of the applications described and/or claimed herein.

[0084] As shown in FIG. 4, the electronic device 10 includes at least one processor 11, and a memory communicatively connected with the at least one processor 11, such as a read-only memory (ROM) 12, a random access memory (RAM) 13, etc., where the memory stores a computer program executable by at least one processor, and the processor 11 can perform various appropriate actions and processes according to a computer program stored in the ROM 12 or a computer program loaded from a storage unit 18 into the RAM 13. In the RAM 13, various programs and data necessary for the operation of the electronic device 10 may further be stored. The processor 11, ROM 12, and RAM 13 are connected through a bus 14. An input/output (I/O) interface 15 is also connected to the bus 14.

[0085] Multiple components in the electronic device 10 are connected to the I/O interface 15, include: an input unit 16, such as a keyboard, a mouse, etc.; an output unit 17, such as various types of displays, speakers, etc.; a storage unit 18, such as a magnetic disk, an optical disk etc.; and a communication unit 19, such as a network card, a modem, a wireless communication transceiver, and the like. The communication unit 19 allows the electronic device 10 to exchange information/data with other devices through a computer network such as the Internet and/or various telecommunication networks.

[0086] The processor 11 may be various general and/or special-purpose processing components having processing and computing capabilities. Some examples of the processor 11 include, but are not limited to, a central processing unit (CPU), a graphics processing unit (GPU), various dedicated artificial intelligence (AI) computing chips, various processors that run machine learning model algorithms, digital signal processing processors (DSP), and any suitable processor, controller, microcontroller, etc. The processor 11 performs the various

methods and processes described above, such as the driving intention recognition method.

[0087] In some embodiments, the driving intention recognition method can be implemented as a computer program, which is tangibly contained in a computer-readable storage medium, for example, a storage unit 18. In some embodiments, part or all of the computer program may be loaded and/or installed on the electronic device 10 via the ROM 12 and/or the communication unit 19. When the computer program is loaded into the RAM 13 and performed by the processor 11, one or more steps of the driving intention recognition method described above can be performed. Optionally, in other embodiments, the processor 11 may be configured in any other appropriate way (for example, by means of firmware) to perform the driving intention recognition method.

[0088] Various implementations of the system and technique described above herein can be implemented in a digital electronic circuit system, an integrated circuit system, a field programmable gate array (FPGA), an application specific integrated circuit (ASIC), application specific standard product (ASSP), a system on chip (SOC), a complex programmable logic device (CPLD), a computer hardware, firmware, software, and/or combinations thereof. These various embodiments may include being implemented in one or more computer programs which can be performed and/or interpreted on a programmable system including at least one programmable processor, the programmable processor can be a special-purpose or general-purpose programmable processor, can receive data and instruction from storage system, at least one input device, and at least one output device, and transmit data and instruction to the storage system, the at least one input device, and the at least one output device.

[0089] The one or more computer programs for implementing the method of the present application may be written in one programming language or any combination of programming

languages. These computer programs can be provided to a processor of a general-purpose computer, a special-purpose computer, or other programmable data processing apparatus, so that the computer programs, when being performed by the processor, cause the functions/operations specified in the flowchart and/or block diagram to be implemented. The computer programs may be performed entirely on the machine, partly on the machine, partly on the machine, and partly on a remote machine as a stand-alone software package, or entirely on a remote machine or remote server.

[0090] In the context of the present application, a computer-readable storage medium may be a tangible medium that may contain or store a computer program for being used by an instruction execution system, apparatus, or device, or used in conjunction with an instruction execution system, apparatus, or device. A computer-readable storage medium may include, but is not limited to, an electronic, magnetic, optical, electromagnetic, infrared, or semiconductor system, apparatus, or device, or any suitable combination of the foregoing. Optionally, a computer-readable storage medium may be a machine-readable signal medium. More specific examples of machine-readable storage media would include one or more wire-based electrical connected or portable computer discs, hard drives, RAM, ROM, erasable programmable read-only memory (EPROM) or flash memory, optical fiber, compact disk read-only memory (CD-ROM), optical storage, magnetic storage, or any suitable combination of the foregoing.

[0091] To provide interaction with the user, the systems and techniques described herein can be implemented on an electronic device having a display device (e.g., a cathode ray tube (CRT) or liquid crystal display (LCD)) configured to display information to the user; and a keyboard and a pointing device (e.g., a mouse or a trackball) through which the user can provide input to the electronic device. Other kinds of devices can also be configured to provide

interaction with the user; for example, the feedback provided to the user can be any form of sensory feedback (e.g., visual feedback, auditory feedback, or tactile feedback); and can be in any form (including acoustic input, speech input or, tactile input) to receive input from the user.

[0092] The systems and techniques described herein can be implemented in a computing system that includes back-end components (e.g., as a data server), or a computing system that includes middleware components (e.g., an application server), or a computing system that includes front-end components (e.g., a user computer having a graphical user interface or web browser through which a user can interact with embodiments of the system and technique described herein), or be implemented in a computing system including any combination of such backend components, middleware components, or front-end components. The components of the system can be interconnected by any form or medium of digital data communication (e.g., a communication network). Examples of communication networks include: local area networks (LANs), wide area networks (WANs), blockchain networks, and the Internet.

[0093] A computing system can include a client and a server. The client and the server are generally remote from each other and typically interact through a communication network. The relationship of the client and the server arises from computer programs running on the respective computers and having a client-server relationship with each other. The server can be a cloud server, also known as a cloud computing server or a cloud host, and is a host product in the cloud computing service system to overcome the drawbacks of difficult management and weak business expansion in traditional physical hosts and virtual private servers VPSs.

Claims

1. A driving intention recognition method, applied to a driving intention recognition system, comprising:

acquiring, by a pre-processing module of the driving intention recognition system, original driving data of a vehicle, and performing data processing in a set mode on the original driving data, to obtain target driving features;

performing, by an inference module of the driving intention recognition system, intention recognition on the target driving features to obtain a driver's intention recognition result;

correcting, by a post-processing module of the driving intention recognition system, the intention recognition result to obtain a target intention recognition result.

2. The driving intention recognition method according to claim 1, wherein the data processing in the set mode comprises: pre-processing, feature extraction, and data dimension reduction processing;

the acquiring, by a pre-processing module, original driving data of a vehicle, performing data processing in the set mode on the original driving data, to obtain the target driving features comprises:

acquiring, by the pre-processing module, the original driving data of a vehicle, and performing pre-processing on the original driving data to obtain pre-processed driving data;

performing feature extraction on the pre-processed driving data to obtain driving feature data; and

performing data dimension reduction processing on the driving feature data to obtain the target driving features.

3. The driving intention recognition method according to claim 2, wherein the performing data dimension reduction processing on the driving feature data to obtain the target driving features comprises:

performing feature selection on the driving feature data by using a set feature selection algorithm to obtain selected driving features; and

performing dimension reduction processing on the selected driving features by using a data dimension reduction algorithm to obtain the target driving features.

4. The driving intention recognition method according to claim 2, wherein the performing pre-processing on the original driving data to obtain the pre-processed driving data comprises:

performing data cleaning on the original driving data to obtain cleaned driving data; and

performing a standardization process on the cleaned driving data to obtain the pre-

processed driving data.

5. The driving intention recognition method according to claim 1, wherein the performing, by an inference module, intention recognition on the target driving features to obtain the driver's intention recognition result comprises:

calling an intention recognition model in the inference module; and

inputting the target driving features into the intention recognition model to obtain the driver's intention recognition result.

6. The driving intention recognition method according to claim 1, wherein the correcting, by the post-processing module, the intention recognition result to obtain the target intention recognition result, comprises:

calling set business rules in the post-processing module; and

correcting the intention recognition result according to the set business rules to obtain the target intention recognition result.

7. The driving intention recognition method according to claim 1, wherein obtaining the target intention recognition result comprises:

when a plurality of intention recognition results exist, acquiring priorities corresponding to the plurality of intention recognition results; and

screening the plurality of intention recognition results according to the priorities corresponding to the plurality of intention recognition results to obtain the target intention recognition result.

8. A driving intention recognition system, comprising:

a pre-processing module, configured to acquire original driving data of a vehicle, and perform data processing in a set mode on the original driving data to obtain target driving features;

an inference module, configured to perform intention recognition on the target driving features to obtain a driver's intention recognition result; and

a post-processing module, configured to correct the intention recognition result to obtain a target intention recognition result.

9. An electronic device, comprising:

at least one processor; and

a memory connected to the at least one processor in a communication manner,

wherein the memory stores a computer program executable by the at least one processor, and the computer program is executed by the at least one processor to cause the at least one processor to execute the driving intention recognition method according to any one of claims

1 to 7.

10. A computer-readable storage medium, storing a computer instruction, wherein the computer instruction is configured to cause a processor, when executing the computer instruction, to implement the driving intention recognition method according to any one of claims 1 to 7.