lowing detailed description of the preferred embodiments of the invention in conjunction with the accompanying drawings, in which:

[0021] FIG. **1** is a block diagram of human interaction systems using kinesthetic feedback according to the present invention;

[0022] FIG. **2** is a perspective view of human interaction systems using kinesthetic feedback according to a first embodiment of the present invention;

[0023] FIG. **3** is a perspective view of human interaction systems using kinesthetic feedback according to a second embodiment of the present invention;

[0024] FIG. **4** is a front view of human interaction systems using kinesthetic feedback according to a third embodiment of the present invention;

[0025] FIG. **5** is a flowchart showing a method of operating the human interaction systems using kinesthetic feedback according to the present invention;

[0026] FIG. **6** shows mechanical motions of the human interaction systems using kinesthetic feedback according to the present invention;

[0027] FIGS. **7***a* and **7***b* show examples of using the human interaction systems using kinesthetic feedback according to the first embodiment of the present invention;

[0028] FIGS. **8***a* and **8***b* show examples of using the human interaction systems using kinesthetic feedback according to the second embodiment of the present invention; and

[0029] FIGS. **9***a* to **9***c* show examples of using the human interaction systems using kinesthetic feedback according to the third embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0030] Hereinafter, the present invention will be described in detail by explaining preferred embodiments of the invention with reference to the attached drawings.

[0031] FIG. **1** is a block diagram of human interaction systems using kinesthetic feedback according to the present invention.

First Embodiment

[0032] FIG. **2** is a perspective view of human interaction systems using kinesthetic feedback according to a first embodiment of the present invention. Referring to FIG. **2**, the interaction systems using kinesthetic feedback according to the first embodiment of the invention use folder type mobile terminals **110** and **210**. For convenience of explanation, a mobile terminal initially operated by a user is referred to as a first terminal **110** and a mobile terminal that responds to the first terminal **110** is referred to as a second terminal **210** hereinafter.

[0033] Referring to FIG. **1**, the first and second terminals **110** and **210** respectively include a driver **300**, a sensor **400**, a converter **500** and a communication module **600**. Here, the driver **300** operates the second terminal **210** such that the second terminal **210** responds to the first terminal **110** or delivers kinesthetic feedback corresponding to a motion of the second terminal **210** to the user through the first terminal **110**. Any driving device can be used as the driver **300** if it can perform the aforementioned operation. Preferably, a motor for rotating folders of the first and second terminals **110** and **210** is used as the driver **300**. More preferably, a DC motor is used. Further, a brake for restricting the operation of the driver **300** is provided at one side of the driver **300**. When an external force is applied to the first or second terminal **110** and **210**, to counteract the motion of the other terminal, the brake is used for the purpose of restricting the motion of the other terminal. Any brake can be used if it can accomplish this purpose. Preferably, a magnetic particle brake that is stable and has high response time is used. The magnetic particle brake can easily control a torque voltage and output torque.

[0034] The sensor **400** according to the first embodiment of the invention measures motion magnitude and path of the driver **300** driven by an external force such as handling of the user. Any sensor can be used as the sensor **400** if it can measure motion magnitude and path of the driver **300** that drives the folders of the first and second terminals **110** and **210**.

[0035] The converter **500** according to the first embodiment of the invention is used for the purpose of converting a motion signal of the first terminal **10**, measured by the sensor **400**, into an electric signal for communication or converting an electric signal received by the second terminal **210** into a motion signal for driving the second terminal **210**. Any converter can be used if it can accomplish the aforementioned purpose. However, it is preferable to use a converter including an encoder that is attached to the driver **300** and encodes a motion signal and a decoder that removes noise from a received electric signal and decodes the electric signal into a signal for communication.

[0036] The communication module **600** according to the first embodiment of the invention is used for communication between the first and second terminals **110** and **210** and includes a data module of a conventional terminal and a data communication module **600** for controlling the terminal.

Second Embodiment

[0037] FIG. **3** is a perspective view of human interaction systems using kinesthetic feedback according to a second embodiment of the present invention. Referring to FIG. **3**, the human interaction systems according to the second embodiment of the invention use slide type terminals **120** and **220**. The configurations of the human interaction systems **120** and **220** according to the second embodiment of the invention are similar to those of the human interaction systems **110** and **210** according to the first embodiment of the invention, as shown in FIG. **1**. However, the slide type terminals **120** and **220** perform a rotary motion different from that of the folder type terminals **110** and **210**, and thus the slide type terminals **120** and **220** have a configuration corresponding to the rotary motion.

[0038] The driver **300** according to the second embodiment of the invention is used for the same purpose and effect as those of the driver **300** of the human interaction systems according to the first embodiment of the invention. The driver **300** according to the second embodiment of the invention uses a linear motor suitable for linear movement of a slide. Further, the brake for restricting the movement of the driver **300** uses a linear brake suitable to restrict linear movement. The linear brake is easy to restrict linear movement and has satisfactory performance and high stability.

[0039] The converter **500** according to the second embodiment of the invention includes a linear encoder and a linear decoder for data conversion according to linear movement.

[0040] The sensor **400** and the communication module **600** according to the second embodiment of the invention are