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(54) Title: CONTROL DEVICE FOR CONSOLE-BASED VIDEOGAMES

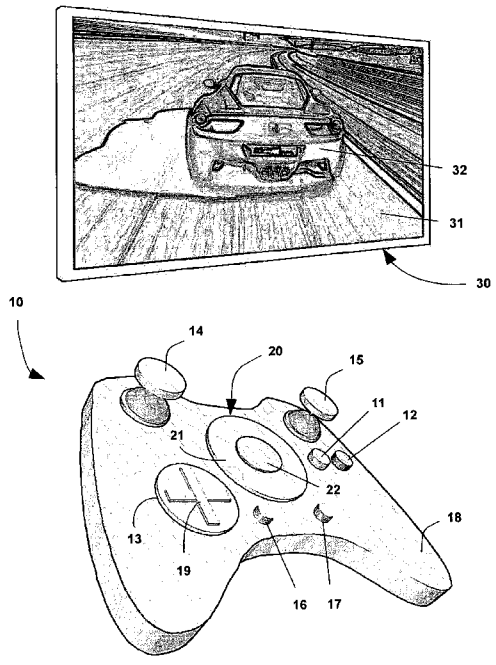


FIG. 1

(57) Abstract: A control device (10) for console-based videogames, that is particularly suitable for sport driving games (31), comprising: - one or more joystick devices (14) and (15), further comprising: means able to convert a spatial position of respective levers, moved by a player, into a first set of electrically carried signals; - a set of button devices (11) and (12), activated by the same player, that are connected to respective switches able to generate a second set of electrically carried signals; characterized in that further comprising: - at least a wheel device (20), moved by the same player, further comprising: a central fixed pivot (22), a ring (21) free to rotate around said pivot (22), a detector of angle between said ring (21) and said pivot (22), means able to convert the detected angle into a third set of electrically carried signals; - means for acquisition, processing and encoding of said first, second and third set of electrically carried signals, in analogical or digital format; - means for data transmission, based on said first, second and third set of electrically carried signals, from said control device (10) to the above said console for videogames, so that the same control device (10) represents an input device, detecting actions of the same player, who controls i.e. a vehicle (32) of a sport driving game (31), rotating said wheel device (20) that works as a steering wheel of the same vehicle (32).

CONTROL DEVICE FOR CONSOLE-BASED VIDEOGAMES.

* * *

The present invention relates to a control device for console based videogames, that is particularly suitable for sport driving games, and that constitutes a specific interface supporting the player's interaction that is more comfortable and effective for typical driving actions of a vehicle.

As known, a particular and common class of videogames are games related to driving of vehicles, i.e. race cars, *Formula 1* and rally cars, that achieve a simulation of competitions on circuits or city roads. The control devices from prior art, permitting a player to drive vehicles, comprise a set of universal commands where functions are changed from time to time according to the types of games, and said commands are not specifically designed for a use in sport driving games.

Therefore, today these games are controlled by a joystick that, if moved left it simulates a counter-clockwise rotary motion of a steering wheel, if moved right it simulates a clockwise rotary motion of the same steering wheel.

This solution decreases significantly the potential of driving, because using this method the turn is done at a constant speed, and it does not allow fast variations of direction like it is possible i.e. in real vehicles.

Furthermore, the player should learn and use an ability of driving that is not the typical natural one learned from the use of a real steering wheel, therefore all the known solutions in videogames have the drawback that driving results to be particularly uncomfortable, so that the level of realism and the perception of the quality of simulation is decreased in players.

Some attempts are known from the prior art trying to overcome these drawbacks, proposing specific peripherals that have been expressly designed and built for

simulations of driving vehicles, comprising a dashboard and a steering wheel to be installed on a table, and a pedalboard comprising the usual commands like accelerator, brakes, etc.

Furthermore, some complete driving equipments have been proposed on the market, that represent a perfect inner part of a car vehicle, including seat, steering wheel, gearshifts, and pedals of accelerator, brakes and clutch. These complete equipments are characterized by a particularly high cost and they take a significant amount of space in the house of consumers, for this reason they are having a cold response from the market.

All these problems are overcome by this invention, which main objective is to disclose a control device for console-based videogames, that supports the player's interaction in sport driving games, so that the same interaction is more comfortable and effective, like the driving actions of a real vehicle.

Another objective is that the same control device can be used within the videogames consoles actually on the market, like *Xbox 360®, Playstation III®* and *Nintendo Wii®*, so representing a universal command device for different types of games, like sport driving games or other games.

Another further objective is that the same control device is able to encode and transmit to videogames consoles the same data set of a traditional control device, so that it is assured the full compatibility with the actual games on the market and it is not required any modification or integration of *software*.

A further objective is that the control device keeps the same standard functions of commands used by previous control devices for other classes of games that are not sport driving games.

Another further objective is that the solution can be produced on a large

industrial scale, using standard electronics, at a cost that is competitive in respect of the previous control devices on the market.

Therefore, it is specific subject of the present invention a control device for console-based videogames, that is particularly suitable for sport driving games, comprising:

- one or more *joystick* devices, further comprising: means able to convert a spatial position of respective levers, moved by a player, into a first set of electrically carried signals;
- a set of button devices, activated by the same player, that are connected to respective switches able to generate a second set of electrically carried signals;

characterized in that further comprising:

- at least a wheel device, moved by the same player, further comprising: a central fixed pivot, a ring free to rotate around said pivot, a detector of angle between said ring and said pivot, means able to convert the detected angle into a third set of electrically carried signals;
- means for acquisition, processing and encoding of said first, second and third set of electrically carried signals, in analogical or digital format;
- means for data transmission, based on said first, second and third set of electrically carried signals, from said control device to the above said console for videogames,

so that the same control device represents an input device, detecting actions of the same player, who controls i.e. a vehicle of a sport driving game, rotating said wheel device that works as a steering wheel of the same vehicle.

The present invention is now being described by way of illustration, still not restrictive, with particular reference to the figures of the enclosed drawings, wherein:

figure 1 is a perspective view of a typical environment where the invention is used, with a control device for a videogames console applied to a sport driving game;

figure 2 is a front perspective view of a control device for a videogames console controlling a sport driving game, according to the prior art;

figure 3 is a front perspective view of a control device for a videogames console controlling a sport driving game, according to the present invention;

figure 4 is a perspective view of a typical environment where the control device of the present invention is used by a player, who interacts with a wheel device;

figure 5 is a view of a functional block diagram of an electronic circuit managing typical functions of a control device according to the prior art;

figure 6 is a view of a functional block diagram of an electronic circuit managing typical functions of a control device according to the present invention.

The following description underlines one of the many embodiments of the present invention just as an example. In fact many others are the possible embodiments depending on the technical solutions adopted.

In figure 1 it is illustrated a typical environment, like i.e. a dining room of an apartment, where the videogames console is connected to a domestic TV set, and the control device 10 is used for a sport driving game 31. The control device 10 comprises, in particular, a wheel device 20, preferably oriented on a horizontal plain surface and placed at the center of casing 18, so that a player is able to interact with the same device 20 and at the same time to act on other commands, like i.e. levers 14 and 15 or buttons 11 and 12, otherwise on the *dig* command 13. The wheel device 20 permits to control the direction of a racing vehicle 32 so that the functions of a steering wheel typical of a real car can be simulated: a clockwise rotary motion causes an increase of vehicle 32 going to the right, a counter-clockwise rotary motion causes an

increase of vehicle 32 going to the left.

With reference to figures 2-3 it is possible to compare a control device 40 of prior art (figure 2) to the control device 10 achieved following the basic concepts of the present invention (figure 3).

A control device 40 from the prior art usually comprises two joysticks 42 and 43, where the first 42 is placed on the front-left position, and the second 43 is placed on the near-central rear position. In the actual driving games, lever 42 controls the direction of a vehicle: if moved left it causes an increase of vehicle going to the left, if moved right it causes an increase of vehicle going to the right. The commands 44, 45 and 46 respectively control hutch, brakes and accelerator of a vehicle, instead buttons 49 and 50 permit to increase or decrease the level of gears. Command 47 and lever 43 control some secondary functions, like i.e. the change of a game view or a rotation of the same view around a pivot point, while *dig* command 41 permits to have access to additional game functions, like telemetry, HUD, etc.

The present invention is based on the observation that the driving of a vehicle using lever 42, moved to the left or to the right, results to be particularly uncomfortable for a player, because it does not represent the natural driving actions used in real vehicles. At the same time, it does not permit some typical operations, like an immediate turn or a smooth and controlled increase of direction.

In figure 3 it is illustrated a possible embodiment of the present invention comprising, in a control device 10, a so called wheel device 20 that achieves some typical functions of a steering wheel in a vehicle. The wheel device 20 further comprises: a fixed central pivot 22, a ring 21 free to rotate around said pivot 22, a detector of angles between said ring 21 and said pivot 22, and means able to convert a detected angle into a set of electrically carried signals. This additional device 20 is

placed in a central position of casing 18, so that a player is able to interact with it using the thumbs, as shown in figure 4, and at the same time to control other elements on board.

Therefore, as above mentioned, the wheel device 20 permits to simulate the functions of a steering wheel of a real car: a clockwise rotary motion causes an increase of vehicle 32 going to the right, a counter-clockwise rotary motion causes an increase of vehicle 32 going to the left.

In particular, commands 44, 45 and 46 keep the standard functions of the traditional devices, so they respectively control hutch, brakes and accelerator of a vehicle, in the same way buttons 49 and 50 permit to increase or decrease the level of gears as before described. In the present invention, lever 43 has been moved to the front-right position (lever 15), while the *dig* command 13 has been moved in a slightly different central position, just to create space for the wheel device 20.

According to this configuration of commands, the device 10 permits a more intuitive and versatile driving of a vehicle from the point of view of a player, enabling at the same time more complex and bold actions, like i.e. a controlled skid on bend, or skid on braking or acceleration, making the interaction with games more engaging and realistic.

In figure 5 it is illustrated a functional block diagram of an electronic circuit 60, managing typical functions of a control device 40, according to the prior art (figure 2). It mainly comprises means 67 able to convert the spatial position of respective levers, or buttons pressed by player, into a set of electrically carried signals. These signals are processed by a microprocessor 64 and encoded and transmitted to a videogames console, using an I/O managing device 65.

In figure 6 it is illustrated a functional block diagram of an electronic circuit 80,

managing typical functions of a control device 10, according to the present invention. Some special means 66 are integrated, converting a detected angle of ring 21 belonging to wheel device 20 into a set of electrically carried signals. These signals are processed, together with the previous ones coming from the standard input commands, by a microprocessor 64 and encoded and transmitted to a videogames console, using an I/O managing device 65.

In such a way, from a point of view of the console, the data acquisition related to action of a player is handled exactly as before from prior art, so that a full compatibility is assured with actual available games on the market.

Therefore, the above examples show that the present invention achieves all the proposed objectives. In particular, it discloses a control device for console-based videogames, that supports the player's interaction in sport driving games, so that the same interaction is more comfortable and effective, like the driving actions of a real vehicle.

In addition, the same control device can be used within the videogames consoles actually on the market, like *Xbox 360®, Playstation III®* and *Nintendo Wii®*, so representing a universal command device for different types of games, like sport driving games or other games.

Furthermore, the same control device is able to encode and transmit to videogames consoles the same data set of a traditional control device, so that it is assured the full compatibility with the actual games on the market and it is not required any modification or integration of *software*.

Further according to the invention, the control device keeps the same standard functions of commands used by previous control devices for other classes of games that are not sport driving games.

Finally, the solution can be produced on a large industrial scale, using standard electronics, at a cost that is competitive in respect of the previous control devices on the market.

The present invention has been described by way of illustration, still not restrictive, in accordance with an embodiment that better suits the needs; however possible changes and/or modifications may be introduced by those skilled in the art without departing from the relevant scope, as defined in the enclosed claims.

* * *

CLAIMS

1. A control device (10) for console-based videogames, that is particularly suitable for sport driving games (31), comprising:

- one or more *joystick* devices (14) and (15), further comprising: means able to convert a spatial position of respective levers, moved by a player, into a first set of electrically carried signals;
- a set of button devices (11) and (12), activated by the same player, that are connected to respective switches able to generate a second set of electrically carried signals;

characterized in that further comprising:

- at least a wheel device (20), moved by the same player, further comprising: a central fixed pivot (22), a ring (21) free to rotate around said pivot (22), a detector of angle between said ring (21) and said pivot (22), means able to convert the detected angle into a third set of electrically carried signals;
- means for acquisition, processing and encoding of said first, second and third set of electrically carried signals, in analogical or digital format;
- means for data transmission, based on said first, second and third set of electrically carried signals, from said control device (10) to the above said console for videogames,

so that the same control device (10) represents an input device, detecting actions of the same player, who controls i.e. a vehicle (32) of a sport driving game (31), rotating said wheel device (20) that works as a steering wheel of the same vehicle (32).

2. A control device (10) for console-based videogames, that is particularly suitable for sport driving games (31), according to previous claim, characterized in that:

- said wheel device (20) is preferably oriented on a horizontal plain surface and placed at the center of casing (18),

so that a player is able to interact with the same device (20) and at the same time to act on other commands, like i.e. levers (14) and (15) or buttons (11) and (12).

3. A control device (10) for console-based videogames, that is particularly suitable for sport driving games (31), according to previous claim 1 or 2, characterized in that:

- the videogames console is one of the actually available on the market, like *Xbox 360®, Playstation III® or Nintendo Wii®*,

so the same control device (10) represents a new universal command device for different types of games, like sport driving games or other games.

4. A control device (10) for console-based videogames, that is particularly suitable for sport driving games (31), according to one or more of previous claims, characterized in that:

- a clockwise rotary motion of said ring (21) in respect of said pivot point (22) causes an increase of vehicle (32) going to the right, a counter-clockwise rotary motion of the same ring (21) in respect of the same pivot point (22) causes an increase of vehicle (32) going to the left,

so that the wheel device (20) permits to simulate the functions of a steering wheel of a real car, enabling some typical operations, like an immediate turn or a smooth and controlled increase of direction.

5. A control device (10) for console-based videogames, that is particularly suitable for sport driving games (31), according to one or more of previous claims, characterized

in that further comprising:

- a set of input commands (44), (45) and (46), respectively controlling: hutch, brakes and accelerator of a vehicle (32), while buttons (11) and (12) permit to increase or decrease the level of gears in the same vehicle (32);
- a set of additional input commands (47) and (43) control some secondary functions, like i.e. the change of a game view or a rotation of the same view around a pivot point, while a *dig* command (41) permits to have access to other game functions, like telemetry, HUD, etc.,

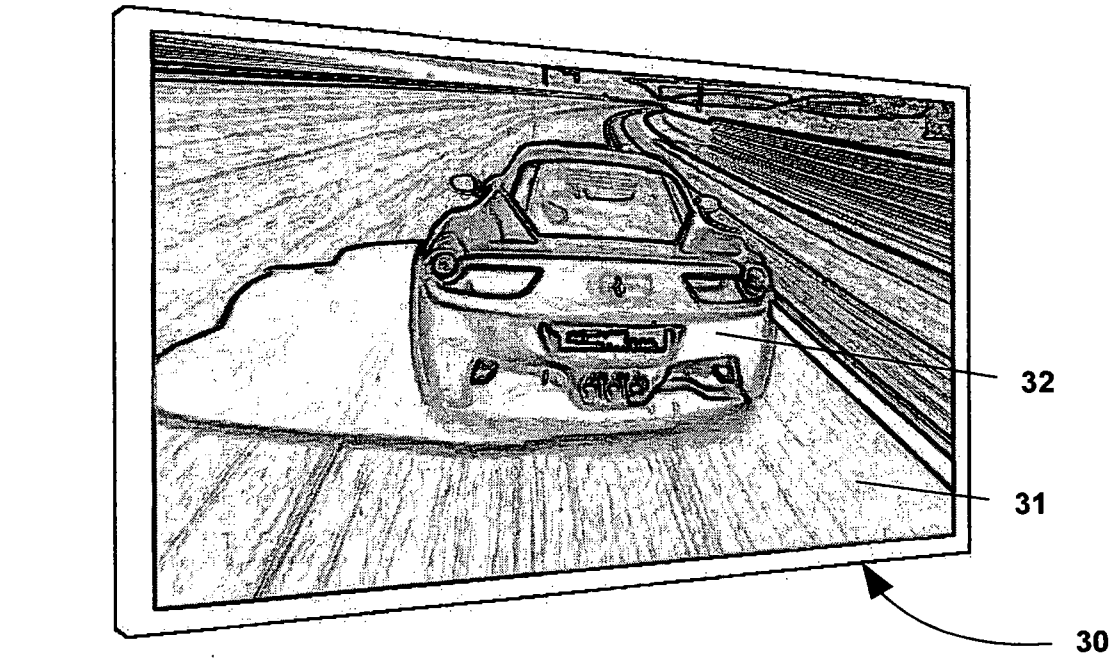
said lever (43) being moved to the front-right position of casing (18), while the *dig* command (13) being moved in a slightly different central position, just to create space for the wheel device (20).

6. A control device (10) for console-based videogames, that is particularly suitable for sport driving games (31), according to one or more of previous claims, characterized in that comprising:

- means (66) converting a detected angle of said ring (21) in respect of said pivot point (22) into a set of electrically carried signals, said signals being processed, together with the ones coming from said *joystick* devices, (14) and (15), and button devices, (11) and (12), by a microprocessor (64), and encoded and transmitted to said videogames console, using an I/O managing device (65),

so that, from a point of view of the console, the data acquisition related to action of a player is handled exactly as before in the prior art, so that a full compatibility is assured with actual available games on the market.

* * *



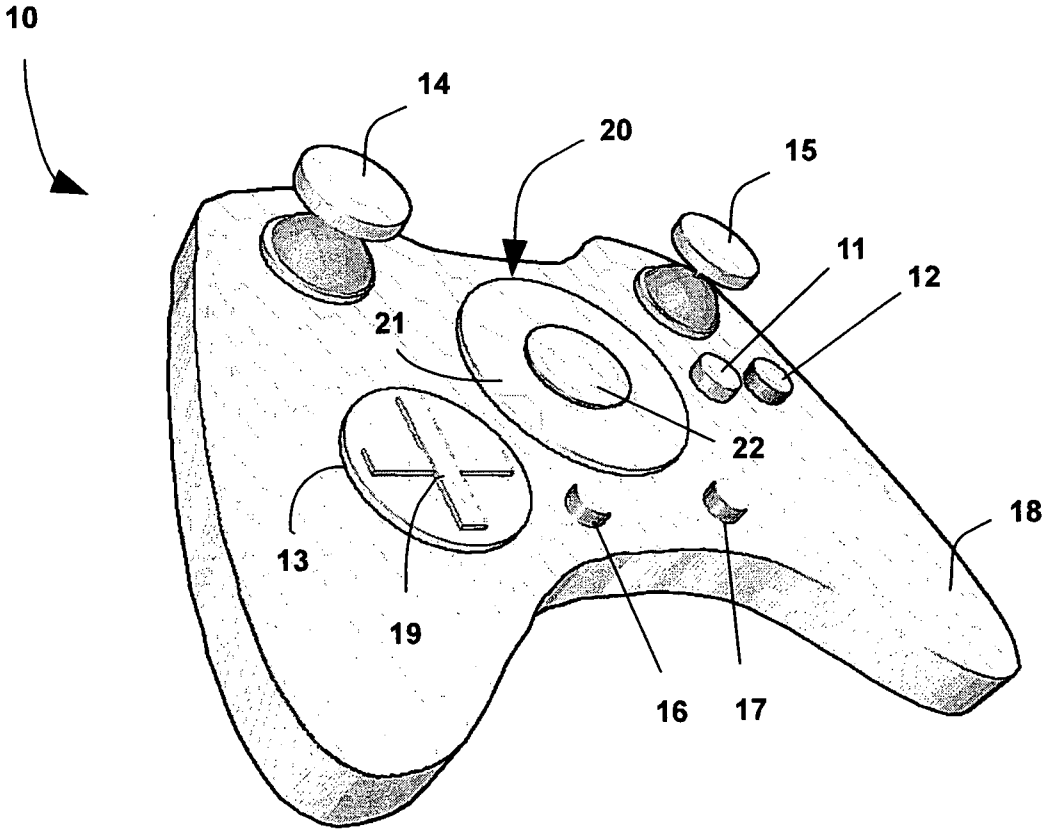
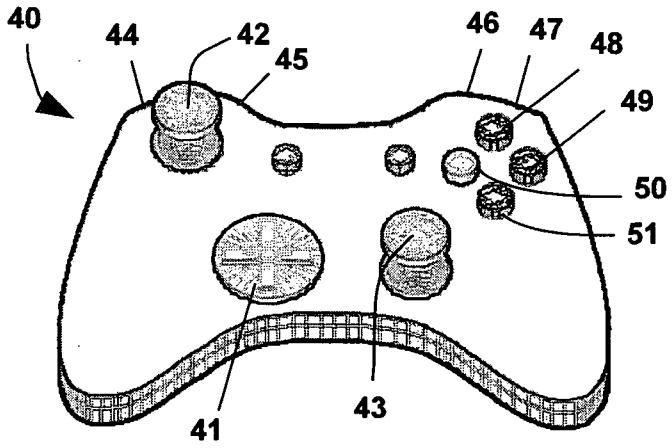


FIG. 1



(prior art)

FIG. 2

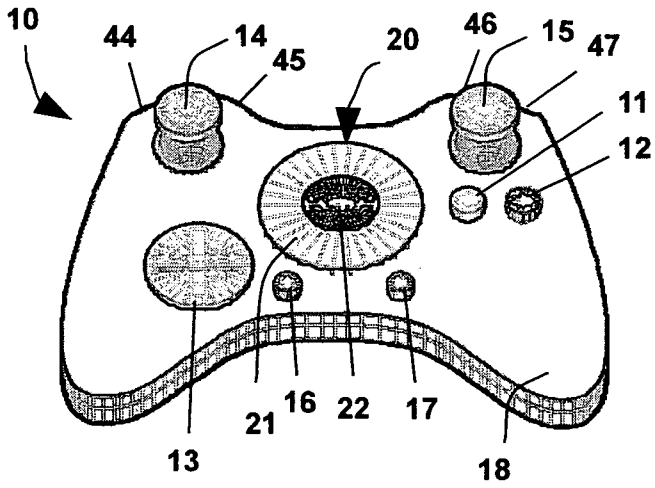


FIG. 3

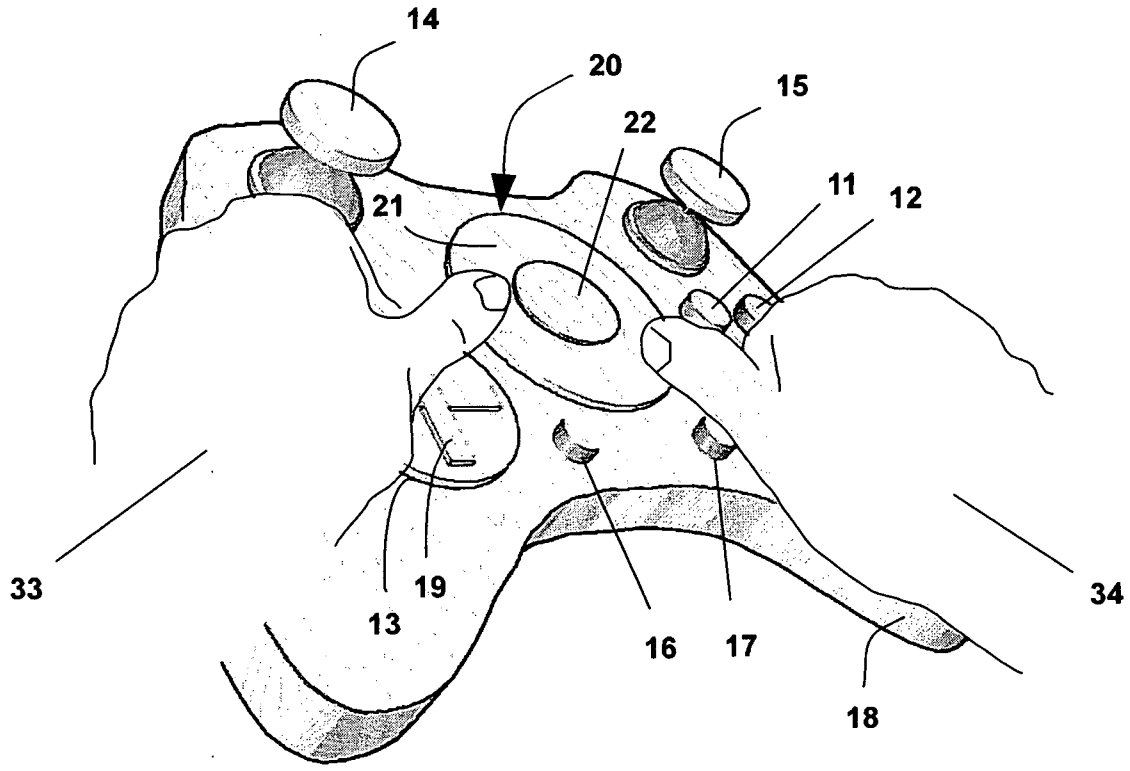
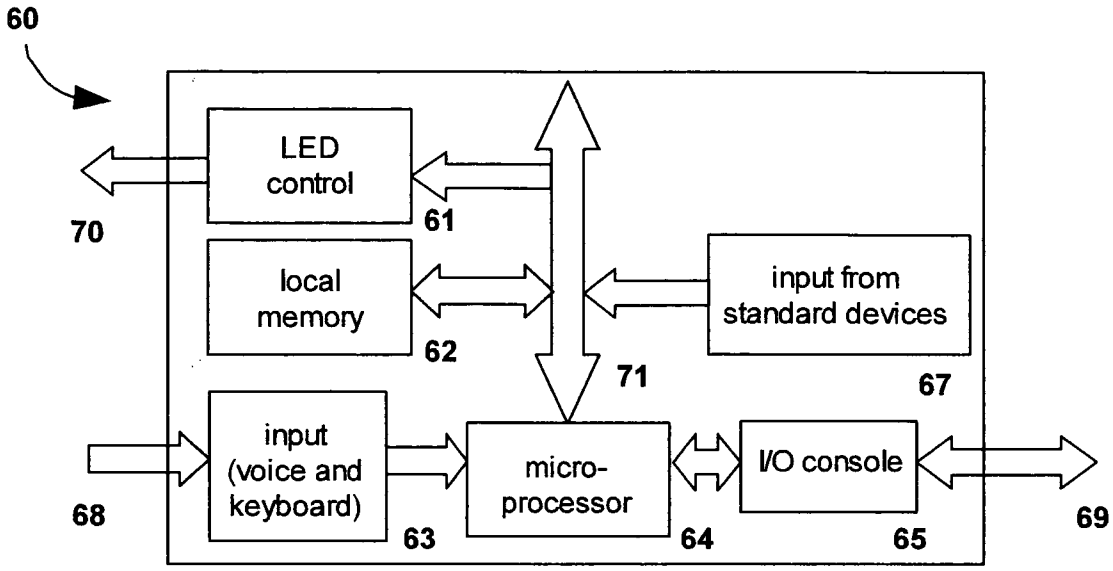


FIG. 4



(prior art)

FIG. 5

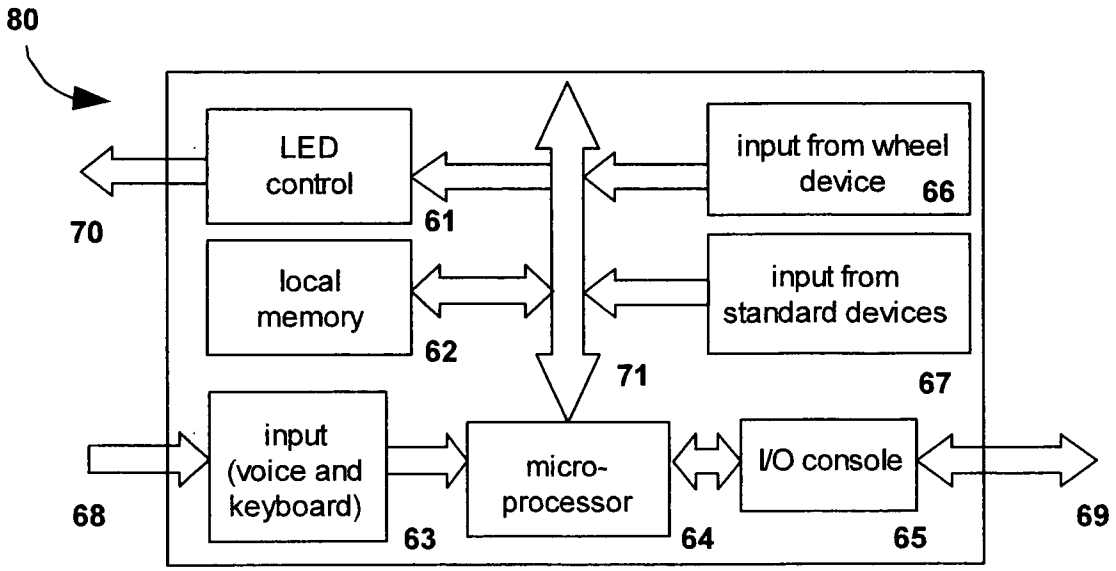


FIG. 6

INTERNATIONAL SEARCH REPORT

International application No
PCT/IT2009/000551

A. CLASSIFICATION OF SUBJECT MATTER
INV. G06F3/033 A63F13/02
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
G06F A63F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2007/130582 A2 (SONY COMP ENTERTAINMENT US [US]; ZALEWSKI GARY M [US]; MAO XIADONG [US) 15 November 2007 (2007-11-15) paragraph [0095] - paragraph [0097] figures 1, 13-14	1-6
X	WO 2008/004783 A1 (LEE SAK [KR]; KIM HONG-GYEUN [KR]) 10 January 2008 (2008-01-10) paragraph [0012] paragraph [0022] - paragraph [0025] figures 1-3	1-6
A	US 2007/265080 A1 (YU ALVIN [TW]) 15 November 2007 (2007-11-15) paragraph [0010] - paragraph [0012] figures 2-3	1-6

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

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Date of the actual completion of the international search	Date of mailing of the international search report
30 June 2010	06/07/2010

Name and mailing address of the ISA/	Authorized officer
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/IT2009/000551

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2007130582 A2	15-11-2007	NONE	
WO 2008004783 A1	10-01-2008	JP 2009542307 T	03-12-2009
		KR 20080003951 A	09-01-2008
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US 2007265080 A1	15-11-2007	NONE	