The invention relates to a golf lesson apparatus and server by using intrinsic location and user authentication which is installed at each tee box of golf courses or driving ranges. This invention aims simple and easy correction of user's swing posture, and is comprised of: the Wireless Communication Part which authenticates users with the user's RFID ID card; the Motion Detection Part which records user's swing posture; the Data Storage Part which stores the video of the user's swing posture; the Key Input Interface Part which receives user's command; the Display Part which shows the video of the user's swing posture on real time basis and the video of analysis and lesson on user's swing posture transmitted from the golf lesson server; the Network Interface Part which connects the golf lesson server via wired/wireless networks; and the Control Part which provides the services linked with the Golf Lesson Server.
[DESCRIPTION]

[Invention Title]
Golf Lesson Apparatus and Server by using Intrinsic Location and User Authentication.

[Technical Field]

This invention relates to a golf lesson apparatus and server by using intrinsic location and user authentication. More specifically speaking, it relates to a golf lesson apparatus and server which authenticate users through the users' IDs and the IDs of the golf courses or driving ranges, the tee boxes and the golf clubs, record the video of the users' swing postures and analyze the users' swing videos, provide the users with the swing lesson video on real time and provide the users with systematic golf lesson which suits for the users' levels and conditions, and provide users with search and replay services for their swing videos and the various golf lesson videos transmitted from the golf lesson server via the wired or wireless networks.

[Background Art]

As with most other sports, golf requires correct swing that makes accurate and stable driving. The swing posture affects the stability, accuracy and distance of the ball. Therefore, learning stable swing posture is essential for the improvement of golf skill.

However, swing posture easily becomes distracted by the golfer's condition or insufficient practice time, leading to inaccurate hitting such as miss-shot, hook and slice.

Also, even though the golfer is accustomed to basic principles of swing posture, while it is relatively easier to analyze other's irrational swing posture, it is not easy to see his/her own posture to identify the cause of inaccurate motion, which leads to such motion getting into habit and loss of interest in golf. Therefore, it is recommended for golfers to identify one's own incorrect posture to restore correct posture and prevent inaccurate driving.

The golfers who practice swing postures in conventional driving range check their own motions with the mirrors on the wall, camera, or camcorders. However, using camcorders is accompanied with a lot of inconveniences of installation, shooting, slow replay, and difficulty of viewing motions in 3D images.

Also, the advice of a coach or other people cannot avoid repeating trial and error in
experience because the golfer cannot see his/her own swing posture. Therefore, it is necessary to easily monitor his/her own swing posture with golf lesson apparatus which can be shared by multiple golfers.

Although an invention which was disclosed by Korean Patent Registration No. 2002-66397 provides a method which helps to correct swing postures of golfers practicing at golf driving ranges via Internet. However, the method requires users to access the service provider's web site with terminals and obtain authentication with user IDs and passwords. Such service is only available in the places where there are computer terminals connected to Internet, but unavailable during the swing exercise in golf courses or driving ranges.

Therefore, since the user cannot see his/her own swing posture on the site, it leads to far unsatisfactory learning efficiency and there remains the demerit that the teaching cannot be conducted by taking into consideration analysis of the golfer's skill, level, and situation.

[DISCLOSURE]

[Technical Problem]

In order to solve the problems described hereinabove, this invention aims to provide a golf lesson apparatus and server which authenticate users through the ID of golf course or golf driving range, the ID of tee box, the ID of golf club, and the ID of user, and shoot and record the users' swing video and analyze the users' swing video, and provide the users with the swing lesson video on real time and provide the users with systematic golf lesson which appropriates for the users' conditions and levels, and provide users with search and replay services for their swing and lesson video via the golf lesson apparatus or wired or wireless networks.

[Technical Solution]

In order to achieve the object as described above, this invention provides a golf lesson apparatus, which is linked with a golf lesson server, installed at teeing places of golf course or golf driving range to provide users with golf lesson services, which is characterized by being comprised of; the wireless communication part which communicate with the user's membership card or his/her golf club to authenticate the user or to receive the information on his/her golf club; the motion detection part which records or captures the user's swings and
motions; the data storage part which stores the video of the user's swing posture transmitted from said the motion detection part, the golf lesson video and image data transmitted from said golf lesson server, and the IDs data of the golf course or golf driving range, and the tee box; a key input interface part through which the save command and analysis options for the user's swing video are entered; a display part which plays the user's swing video and the golf lesson video and displays the information on the golf course or golf driving range; a network interface part which connects and communicates with said golf lesson server via wired/wireless network; and a control part which provides users with said golf lesson services in link with said golf lesson server, authenticates users, records, replays and transmits users' swing postures, and receives and replays at least one or more of the lesson videos which is the analysis of said swing videos, common lesson videos, and the video of the swing of golf professionals.

In addition, another purpose of this invention is to provide a golf lesson service server which is linked with said golf lesson apparatus by using intrinsic location and user authentication and which is characterized by being comprised of: a software programs storage part which stores the software programs for said golf lesson service; a database which stores users' swing videos and lesson videos; a key input interface part which receives the control input of service operators; a display part which is comprised of multiple monitors and displays said users' swing video received from said golf lesson apparatus for service operators to monitor; a communication part which enables communication between said golf lesson apparatus and users' personal mobile communication terminals via wired or wireless network; and a server control part which runs said software programs stored in said software programs storage, authenticates users by receiving the users' IDs, the IDs of the golf course or golf driving range, and the ID of the tee box from said golf lesson apparatus, authenticates users via said personal mobile communication terminals, creates, stores and transmits said golf lesson videos after receiving users' swing video and analyzing them, monitors said teeing places of a golf course or golf driving range, and controls the data search from the stored in said golf lesson server database and said golf lesson apparatus.

[Advantageous Effects]

As explained hereinabove, this invention is effective for golf users to enable simple and easy correction of golf swing postures by analysis on users' swing video using golf
analysis tool or by professional's coaching on real-time basis, and also by watching the users' swing videos and golf lesson videos which are stored in the database of said golf lesson server by convenient search function, through the access to the golf lesson server by simple authentication.

In addition, this invention can provide users with various lesson programs suitable for each user's skill level and environment, with systemized swing analysis videos and golf lesson videos, and with systematic administration of users and golf courses or golf driving ranges.

In addition, users can view their own swing posture videos by accessing to the server whenever and wherever, and preset the video which will be automatically displayed when a user enters a tee box for more convenient and faster lesson.

[Description of Drawings]

Drawing 1 is a schematic block diagram which shows the Golf Lesson Apparatus system in accordance with a desirable implementation example of this invention.

Drawing 2 is a schematic block diagram which shows the internal composition of the Golf Lesson Server system in accordance with a desirable implementation example of this invention.

(Numbering Scheme of the Major Parts in the Drawings)

100: Golf Lesson Apparatus System  110: Wireless Communication Part
120: Motion Detection Part  130: Data Storage Part
140: Key Input Interface Part  150: Display Part
160: Network Interface Part  170: Control Part
200: Golf Lesson Server System  210: Software Programs Storage Part
220: Database  230: Key Input Interface Part
240: Display Part  250: Communication Part
260: Server Control Part

[Best Mode]

The functions and effects of the said members set forth and described hereinabove are described herein below by referring to the drawings. The signs of the parts and components in the drawings are same for the same parts or components throughout all the
drawings. The descriptions on the related notice configurations or functions which may hinder the understanding of the invention are omitted.

Drawing 1 is a schematic block diagram of the Golf Lesson Apparatus System in accordance with a preferred embodiment of the invention.

The Golf Lesson Apparatus System (100) in accordance with a preferred embodiment of the invention is installed at each tee box of golf driving range to provide users with golf swing lesson services through communication with the said Golf Lesson Server System (200) via wired or wireless communication networks.

Here, the wired or wireless communication network includes the Internet including a global open computer network structure which provides TCP/IP protocol and upper layer services, such as HTTP, Telnet, FTP, DNS, SMTP, SNMP, NFS and NIS, and a number of other communication methods such as super high speed data communication protocols like Wibro and High Speed Downlink Packet Access (HSDPA), and bidirectional Digital Multimedia Broadcasting System (DMB system).

The Golf Lesson Apparatus System (100) in accordance with a preferred embodiment of the invention includes Wireless Communication Part (110), Motion Detection Part (120), Data Storage Part (130), Key Input Interface Part (140), Display Part (150), Network Interface PaH (150) and Control Part (170).

The Wireless Communication Part (110) gathers the user ID and golf club information for user authentication through short-range wireless communication with the RFID (Radio Frequency Identification) tags of the membership ID card and golf club of the user. The Wireless Communication Part (110) in accordance with a preferred embodiment of the invention incorporates the Radio Frequency Identification Module for the communication with RFID tags. It identifies membership ID card and golf club of the user who enters tee box and send the information to the Control Part (170).

The preferred embodiment of the invention describes short range wireless communication using RFID, however, the communication method is not restricted to RFID but also available for various wireless communication methods such as the Bluetooth, IrDA (Infrared Data Association), Zigbee and Ultra Wideband.

The users who do not carry membership ID cards can be authenticated by accessing the Golf Lesson Server System (200) using personal mobile communication devices (not drawn in the figures) via wireless Internet or mobile phones and by entering user ID and the
ID of the golf course or golf driving range. In this case, the Golf Lesson Server System(200) transmits the authentication results to the Golf Lesson Apparatus System(100) to provide golf lesson service.

In addition, the Wireless Communication Part(110) receives the information on the manufacturer and type of the golf club from the RFID tags in the golf club of the users who enter the tee box, and transmits the information to the Control Part(170).

Therefore, the Golf Lesson Apparatus System(100) in accordance with a preferred embodiment of the invention stores unique IDs of each golf course, golf driving range, and tee box, and transmits the information in addition to the user's ID collected from the user's membership ID card to the Golf Lesson Server System(200) so that the Golf Lesson Server System(200) can manage the golf course or golf driving range and tee box automatically.

The Motion Detection Part(120) records or captures the swing posture of the user who has entered the tee box and has succeeded in authentication with the Wireless Communication Part(110) or personal mobile communication terminal and saves the image data in the Data Storage Part(130). To this end, the Motion Detection Part(120) in accordance with a preferred embodiment of the invention can be implemented with cameras and motion detecting sensors.

The motion detecting sensor detects the entry of the user into the tee box and when the user swings the golf club, it senses and classifies the unit motion of the user.

The Data Storage Part(130) stores data of users' swing postures video transmitted from the Motion Detection Part(120), the lesson video analyzing users' swing postures or the swing postures video only transmitted from the Golf Lesson Server System(200), swing video of professionals, and the IDs of the golf courses, driving ranges and tee boxes where the Golf Lesson Apparatus Systems(100) are installed, and transmits the information to the Control Part(170) when the user is authenticated. The Data Storage Part(130) can be implemented using HDD(Hard Disk Drive), ODD(Optical Disk Drive), or EEPROM(Electrically Erasable and Programmable Read Only Memory), flash memory device, or SDRAM (Synchronous Dynamic Random Access Memory), which are non-volatile memory devices whose memory can be modified by byte or block unit, in digital data formats such as MPEG(Moving Picture Professionals Group) or AVI(Audio Video Interleave).

The Key Input Interface Part(140) provide means for confirming the saving of the
recorded video after viewing them with the Golf Lesson Apparatus System(100) after each swing. The Key Input Interface Part(140) should be installed in tee boxes at convenient positions for users to enter inputs, and provided with multiple key buttons to enable various options, such as analyses by the drop point of the ball (e.g., rough, bunker, fairway, trouble, etc.), good or bad swing, etc.

The video of the swing selected by the user via the Key Input Interface Part(140) is transmitted to the Golf Lesson Server System(200) in real time and saved by including the IDs of the user, golf club, golf course or driving range, and tee box.

The Display Part(150) provides a visual means for users to view their own swing postures and other information such as weather, courses, holes, practice, etc.

The Display Part(150) in accordance with a preferred embodiment of the invention includes all the 2D display devices such as LCD monitors, IPTVs, and etc., and more preferably, can be implemented with three dimensional displays using hologram to provide 3D, realistic, and accurate images.

The Network Interface Part(160) communicates with the Golf Lesson Apparatus System(100) and the Golf Lesson Server System(200) via wired or wireless networks. The Network Interface Part(160) conveys user's swing posture picture from the Golf Lesson Apparatus System(100) to the Golf Lesson Server System(200) via wired or wireless networks, and conveys the lesson video which is the analysis pictures of the user's swing, from the Golf Lesson Server System(200) to the Golf Lesson Apparatus System(100).

The Control Part(170) controls the overall functions of the Golf Lesson Apparatus System(100) in accordance with a preferred embodiment of the invention, and provides users with the golf lesson service in link with the Golf Lesson Server System(200). The Control Part(170) in accordance with a preferred embodiment of the invention transmits the user ID identified via the Wireless Communication Part(110) and the data of the IDs of the golf course or driving range and tee box stored in the Data Storage Part(130) to the Golf Lesson Server System(200) for user authentication, and enables the Golf Lesson Server System(200) to recognize that the user wants to use the golf lesson service.

The Control Part(170), when the user enters a tee box and is successfully authenticated, controls the Motion Detection Part(120) to record or capture user swing posture, saves the data in the Data Storage Part(130) and replays it after the swing.

Therefore, the user can view his/her own swing posture picture after each swing, and
can select good or bad swing to transmit it to and save it in the Golf Lesson Server System(200) using the Key Input Interface Part(140).

The Control Part(170), after replaying the user's swing posture picture, at the key input for saving the picture, transmits the picture added with the IDs of the golf course or driving range, tee box, user, and golf club to the Golf Lesson Server System(200).

The videos of the swings, the video analyzed for the lesson, and professionals' swings stored in the Golf Lesson Apparatus System(IOO) or in the Golf Lesson Server System(200) can be viewed by the users of the golf lesson service of this invention, whenever and wherever, on personal computers, personal mobile communication terminals, or IPTVs via wired or wireless network, or at the golf courses or driving ranges where the Golf Lesson Apparatus System(IOO) in accordance with a preferred embodiment of the invention is installed.

In addition, users can preset the type of the video which will be replayed when the users enter tee boxes by accessing the Golf Lesson Server System(200) via wire or wireless network. The type of the video selected from the user's swing posture, video for lesson, and professional's swing posture is displayed automatically by the user identification of the Control Part(170).

In addition, the Control Part(170) receives the information on the golf club for the user from the Wireless Communication Part(IO) and transmits it along with the ID information of the user, golf course or driving range and tee box to the Golf Lesson Server System(200) to receive and provide the user with the video of the professional golfers who use the same golf clubs, the optimal swing posture of the golf club, and detailed information on the club.

The Control Part(170), after sending the swing posture of the user to the Golf Lesson Server System(200), receives the lesson video which has analyzed the user's swing posture, periodically or in real time, and replays it. Therefore, the user can view his/her own swing posture analyzed with a golf analysis tool or by a golf professional, video for teaching searched and received by the Golf Lesson Server System(200) from the Data Storage Part(130) or Database(220), along with the verbal instructions through the speaker (not shown in the drawings) of the Golf Lesson Apparatus System(IOO).

In addition, the Golf Lesson Apparatus System(IOO) in accordance with a preferred embodiment of the invention, in link with the Golf Lesson Server System(200), can provide
the golf lessons differentiated from the golfer's level and environment, golf club, field condition, physical condition, characteristics of the swing posture, and in-field experiences, and can proceed with the follow-up lessons considering the record of the previous lesson.

Drawing 2 is a schematic block diagram of the internal structure of the Golf Lesson Server System(200) in accordance with a preferred embodiment of the invention.

The Golf Lesson Server System(200) in accordance with a preferred embodiment of the invention provides users with the golf lesson services by user authentication and analyses on users' swing postures in link with the said Golf Lesson Apparatus System(100).

The Golf Lesson Server System(200) in accordance with a preferred embodiment of the invention includes the Software Programs Storage Part(210), Database(220), Key Input Interface Part(230), Display Part(240), Communication Part(250) and the Server Control Part(260).

The Software Programs Storage Part(210) is a means to store the software programs for the golf lesson service. The Software Programs Storage Part(210) in accordance with a preferred embodiment of the invention stores the swing posture analysis software, authentication software which authenticates and manages the IDs of users. Golf courses or driving ranges, and tee boxes, monitoring control software which monitors the Golf Lesson Apparatus System(100) which are linked with the Golf Lesson Server System(200), server management software which controls the overall functions of the Golf Lesson Server System(200), the software which analyzes the index code of various swing posture pictures and lesson videos stored in the Data Storage Part(130) and Database(220) of the Golf Lesson Apparatus System(100), and the software which maps the lesson data which matches with the user or user's needs by searching the swing posture pictures and lesson videos stored in the Data Storage Part(130) and Database(220).

The Database(220) is a storage means for the users' swing posture pictures transmitted from the Golf Lesson Apparatus System(100), and each clip of the videos includes various index information such as the IDs of the users, golf clubs, golf courses, golf driving ranges, tee boxes, and time. And the Database(220) provides various search and statistics functions for easy inquiry into the stored pictures. It also stores the video added with the analysis results and professional's teachings and the video of professional golfers' swing postures.

The Key Input Interface Part(230) is a means of receiving the input from the operator.
of the Golf Lesson Server System(200) for the control of the Golf Lesson Server System(200), and incorporates multiple keys.

The Display Part(240) incorporate multiple display monitors and are the output devices which enable users to view their own swing posture in video with the Golf Lesson System(110). The Display Part(240) provide the monitoring displays by golf courses, golf driving ranges, tee boxes, members, lessons, and golf clubs. When the system operator selects a specific golf course or driving range with the Key Input Interface Part(230), the whole tee boxes of the golf course or driving range are displayed. If a specific tee box is selected, the tee box is displayed in zoom-up screen. In addition, the images which require analysis can be saved by the operator, even though the user does not give the command for saving his/her own swing posture in pictures.

The Communication Part(250) communicates with the Golf Lesson Apparatus System(100) via wired or wireless network, and performs the communication for user and tee box authentication in case that the user accesses the system via personal mobile communication terminal, and communicates with various wired or wireless communication terminals such as PCs and IP TVs when the user desires to look up swing or lesson videos.

The Control Part(260) runs various software programs stored in the Software Programs Storage Part(210) to control overall functions of the Golf Lesson Server System(200), authenticates user by receiving IDs of the user, golf course or driving range, and tee box from the Golf Lesson Apparatus System(100), receives and analyzes user's swing posture pictures and creates lesson video, and saves and transmits them, and monitors golf courses, golf driving ranges and tee boxes.

The Control Part(260) in accordance with a preferred embodiment of the invention authenticates the user who requests access via personal mobile communication terminal, not with membership ID card, by receiving the IDs of the user, golf course or driving range, and tee box via wireless Internet or wireless telephone, and if the authentication is successful, transmits the authentication result to the Golf Lesson Apparatus System(100) at the respective tee box of the golf course or driving range to provide the user with golf lesson service.

In addition, the Server Control Part(260) analyzes the swing posture pictures from the Golf Lesson Apparatus System(100), and when a lesson video is requested, produces the lesson video and transmits it to the Golf Lesson Apparatus System(100) to display
immediately or at the time and place requested by the user.

Here, the lesson video provided to the users can be those with the analysis result of the users' swing posture, systematized lesson video or swing posture pictures of the professional golfers stored in the Data Storage Part(130) and Database(220).

Here, in case that the user predefines the picture to be displayed, it will be automatically displayed at the tee box on the user's entry or at the time predefined by the user.

In addition, the lesson video can provide corrective instructions for swing, approaches to roughs, bunkers, fairways and troubles in the images of real courses, and professional golfer's swing postures on real fields, as well as those with the analyses on the users' swing postures, with verbal guidelines of professional golfers.

In addition, the Server Control Part(260) can send user's swing posture to the personal mobile communication terminal of an professional and receive the professional's evaluation and advice which are reflected on the lesson video and transmitted to the respective Golf Lesson Apparatus System(IOO).

In addition, the Server Control Part(260), when receiving the information of the golf club of the user from the Golf Lesson Apparatus System(IOO), can search and provide the user with the video of the professional golfers who use the same golf club, optimal swing posture and using method.

In addition, the Server Control Part(260), when a user requests the search of video of swing or lesson via wired or wireless network using the Golf Lesson Apparatus System(IOO), computer system, personal mobile communication terminal, or IPTV, searches the requested video in the Data Storage Part(130) and/or Database(220) of the Golf Lesson Apparatus System(IOO) and sends it to the user.

In addition, the Server Control Part(260), considering the level and environment of the user, can provide lessons in diversified levels by golf club type, field condition, physical condition, swing posture, and real play experiences, and when the user accesses the system for golf lesson service, provides the user with the follow-up lesson after searching the previous lesson of the user.

In addition, the Server Control Part(260) provides users with systematic lesson schedule through the Display Part(150) of the Golf Lesson Apparatus System(IOO), according to the level selected by the user.

As described hereinaabove, the Golf Lesson Apparatus System(IOO) and Golf Lesson
Server System(200) in accordance with a preferred embodiment of the invention can provide users with virtual one-to-one golf lesson by real time based analysis, and the swing and lesson video can be provided any time and any where the Golf Lesson Apparatus System(IOO) is available.

For example, when a user enters the tee box of a golf course or driving range where the Golf Lesson Apparatus System(IOO) is installed, the Golf Lesson Server System(200) can identify the user’s location and/or previous lesson record through the authentication of the user using short-range wireless communication or personal mobile communication terminal and provide the user with follow-up lesson or lessons optimized for the user’s environment(e.g., weather) or level on real time basis, and the user can search and look up past lesson pictures and swing posture pictures easily.

In addition, various swing posture pictures and lesson pictures can be stored in both the Golf Lesson Apparatus System(IOO) and Golf Lesson Server System(200) to be prepared for network or server database failure.

[Mode for Invention]

While it is apparent that the illustrative embodiments of the invention herein discloses and fulfills the objective stated above, it will be appreciated that numerous modifications and other embodiments may be devised by those skilled in the art without departing from the spirit and scope of this invention. Therefore, it will be understood that the appended claims are intended to cover all such modifications and embodiments which come within the spirit and scope of this invention.

[Industrial Availability]

The golf courses or driving ranges installed with this invention can provide users who are authenticated with their membership cards with built-in RFID chips to access the server with analyses on their swing postures by golf professionals in real time through monitors for effective and efficient golf lesson including the correction of users' swing postures.

For an exemplary implementation, the Golf Lesson Apparatus System in accordance with a preferred embodiment of the invention stores unique IDs of the golf courses, driving ranges and tee boxes. When a user desires to receive a golf lesson service, the Golf Lesson
Apparatus System collects the IDs of the user, golf course or driving range and tee box and sends the data to the Golf Lesson Server System to enable efficient management of the golf course or driving range and the tee box.

In addition, all the videos including the user's swing posture, lesson including the analysis of the user's swing posture, and golf professional's teaching instructions which are recorded, replayed, and stored at the tee box of the user can be replayed on the personal computer or personal mobile communication terminal of the user any time and any place via wired or wireless communication network.

In addition, in any place where the Golf Lesson Apparatus System in accordance with a preferred embodiment of the invention is installed, the user can look up the swing postures recorded in the past for comparison and correction.

In addition, the Golf Lesson Apparatus System, in link with the Golf Lesson Server, can provide diversified video and lessons according to the level, club, field and physical conditions, swing posture, and follow-up lesson for the previous lesson of the user, enabling very effective and efficient, customized golf lesson service.

Therefore, this invention can be commercialized in the golf lesson and devices industries.
[CLAIMS]

[Claim 1]
In the apparatus providing golf lesson service to users by being equipped at each tee box of the golf course or driving range linked with a golf lesson server:

Wireless Communication Part which conducts wireless communication with user's membership card and golf club to authenticate the user and collect information of the above golf club;

Motion Detection Part which records or captures the swing posture of the user;

Data Storage Part which stores the moving or still pictures of the swing of the user from said user motion detector, the lesson pictures from the said golf lesson server, and the IDs of the golf course or driving range and tee box;

Key Input Interface Part which receives the command for the saving and analysis options of said the swing videos of the;

Display Part which displays the said swing videos and the information of the golf course or driving range; Network interface Part which communicates with the said golf lesson server via wired or wireless communication network;

Control Part which provides users with the said golf lesson services in link with the said golf lesson server, authenticates users, records, replays and transmits said the videos of the users' swing posture, and receives and replays one or more of the said lesson videos analyzing swing, common lesson videos, and golf professional's swing videos.

[Claim 2]

The golf lesson apparatus and server using intrinsic location and user authentication in accordance with Claim 1, wherein the said Wireless Communication Part makes use of one or more of the short-range wireless communication means such as RFID(Radio Frequency Identification), Bluetooth, IrDA(Infrared Data Association), Zigbee and Ultra Wideband.

[Claim 3]

The golf lesson apparatus and server using intrinsic location and user authentication as in Claim 1, wherein the said Wireless Communication Part is characterized by automatically reading user ID and membership information from user's membership card.
when the user enters the tee box with the membership card.

[Claim 4]

The golf lesson apparatus and server by using intrinsic location and user authentication as in Claim 1, wherein the said Motion Detection Part is characterized by having at least one of the cameras which record user's swing posture and one of the motion detecting sensors.

[Claim 5]

The golf lesson apparatus and server by using intrinsic location and user authentication as in Claim 4, wherein the said motion detecting sensor can detect the user's entry into the tee box, recognize the user's motion and classify the unit of motions.

[Claim 6]

The golf lesson apparatus and server by using intrinsic location and user authentication as in Claim 1, wherein the said Control Part receives the user ID from the membership card and transmits it together with the IDs of the golf course or driving range and tee box to the said golf lesson server for user authentication.

[Claim 7]

The golf lesson apparatus and server by using intrinsic location and user authentication as in Claim 1, wherein the said Control Part records user's swing posture, replays it immediately after the swing, and transmits the video of the swing posture to the said golf lesson server for storage in said data storage part by receiving the save command from the user through said key input interface part.

[Claim 8]

The golf lesson apparatus and server by using intrinsic location and user authentication as in Claim 1, wherein said Control Part, after transmitting said videos of swing posture to said golf lesson server, receives, stores, and replays at least one of the above lesson videos analyzing the above swing video, the above common lesson video, and golf professional's swing video.
[Claim 9]

The golf lesson apparatus and server using intrinsic location and user authentication as in Claim 1, wherein said videos of swing posture is stored in the said golf lesson server along with the IDs of the user, golf course or driving range, and the tee box.

[Claim 10]

The golf lesson apparatus and server by using intrinsic location and user authentication as in Claim 1, wherein the said Control Part, when receiving the information on the golf club from the said Wireless Communication Part, in link with the said golf lesson server, provides at least one of the videos of the golf professional who uses the same type golf club, the video of the swing posture optimized for the golf club, and the characteristic information of the golf club.

[Claim 11]

The golf lesson apparatus and server by using intrinsic location and user authentication as in Claim 1, wherein the said Control Part automatically replays the videos which are reserved by the user by accessing the said golf lesson server through user authentication.

[Claim 12]

The golf lesson apparatus and server by using intrinsic location and user authentication as in Claim 1, wherein the said Display Part is 2/3-dimensional display using LCD monitor or hologram.

[Claim 13]

A golf lesson apparatus and server using intrinsic location and user authentication which is characterized by being comprised of:

- a Software Programs Storage Part which stores the software programs required for said golf lesson services;
- a Database which stores the video of the swing posture of the user and lesson;
- a key input interface part which receives control command inputs from users;
Display Part of multiple display monitors which provide visual monitoring of the said videos of swing posture received from the said golf lesson system;

a Communication Part which performs communication between the said golf lesson system and personal mobile communication terminals via wired or wireless network;

a Server Control Part which runs the said software programs on the said software programs storage part, authenticates users by receiving the IDs of the user, golf course or driving range and tee box, or via personal mobile communication terminal, creates, saves and transmits lesson videos with the received video of the swing posture, monitors golf course or driving range and tee box, and searches and controls the data stored in the said database and golf lesson system.

[Claim 14]

The golf lesson apparatus and server by using intrinsic location and user authentication as in Claim 13, wherein the Software Programs Storage Part stores one or more of the software programs for the said swing posture analysis, control and authentication of the IDs of users, golf courses, driving ranges, and tee boxes, monitoring of the said multiple golf lesson systems, server management, index code analysis of the videos of swing posture, and database search mapping.

[Claim 15]

The golf lesson apparatus and server by using intrinsic location and user authentication as in Claim 13, wherein the said Display Part provides the monitoring displays by the golf course, driving range, lesson, club, tee box, and user, for the whole tee boxes of the golf course or driving range when selected by the operator via the said Key Input Interface Part, or zoom up display of a specific tee box selected by the operator.

[Claim 16]

The golf lesson apparatus and server by using intrinsic location and user authentication as in Claim 13, wherein the said Server Control Part authenticates the user with the IDs of the user, golf course or driving range, and tee box received from the user's personal mobile communication terminal, and after successful authentication, transmits the authentication result to the said golf lesson system installed at said tee box of the golf course.
or driving range.

[Claim 17]

The golf lesson apparatus and server by using intrinsic location and user authentication as in Claim 13, wherein the said Server Control Part, when providing the video for lesson after analyzing the swing posture, creates and replays the said video for lesson immediately after receiving the said video of the swing posture, or displays the said video for lesson on the said golf lesson system at the tee box of the golf course or driving range at the time preset by the user.

[Claim 18]

The golf lesson apparatus and server by using intrinsic location and user authentication as in Claim 17, wherein the said video for lesson is one or more of the videos analyzing the swing posture, correction of the swing posture in accordance with the drop position of the ball (rough, bunker, fairway, and trouble), approach method according to the drop position of the ball with the background image of the real course, and a golf professional on real course.

[Claim 19]

The golf lesson apparatus and server by using intrinsic location and user authentication as in Claim 13, wherein the said Server Control Part searches and provides the user with the data stored in the said database and/or golf lesson system when the user requests search of the videos for lesson via the said golf lesson system, computer system, personal mobile communication system or IPTV.

[Claim 20]

The golf lesson apparatus and server by using intrinsic location and user authentication as in Claim 13, wherein the said Server Control Part can provide the golf lessons differentiated by the golfer's level and environment, golf club, field condition, physical condition, characteristics of the swing posture, and field experiences, and can proceed with the follow-up lessons considering the record of the previous lesson.
[Claim 21]

The golf lesson apparatus and server by using intrinsic location and user authentication as in Claim 13, wherein the said Server Control Part can provide one or more golf lesson progress schedule through the Display Part of the said golf lesson system, in accordance with the level selected by the user.

[Claim 22]

The golf lesson apparatus and server using intrinsic location and user authentication as in Claim 13, wherein the said Server Control Part, when receiving the information on the golf club of the user from the said golf lesson system, provides one or more of the video of the golf professional who uses the same type golf club, the video of the swing posture optimized for the golf club, and the characteristic information of the golf club.

[Claim 23]

The golf lesson apparatus and server by using intrinsic location and user authentication as in Claim 13, wherein the said Server Control Part, upon entry of the user into the tee box, automatically transmits the video previously selected by the user by accessing the said golf lesson server.
INTERNATIONAL SEARCH REPORT

PCT/KR2007/006740

A. CLASSIFICATION OF SUBJECT MATTER

A63B 69/36(2006.01)i

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)
IP C 8 A63B69/36

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Korean Utility Models and applications for Utility Models since 1975
Japanese Utility Models and applications for Utility Models since 1975

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
eKIPASS(KIPO internal) & keyword golf practice apparatus

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No</th>
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<td>KR 2002-66397 A (CHOI, SEUNGHWHAN) 16 August 2002 (16 08 2002) see claims and drawings</td>
<td>1-23</td>
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<tr>
<td>A</td>
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☐ Further documents are listed in the continuation of Box C ☒ See patent family annex

* Special categories of cited documents
"A" document defining the general state of the art which is not considered to be of particular relevance
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Date of the actual completion of the international search 17 APRIL 2008 (17 04 2008)
Date of mailing of the international search report 17 APRIL 2008 (17.04.2008)

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