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(54) **METHOD AND SYSTEM FOR REPLICATING AND EDUCATING A GAME PLAYER**

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(57) **ABSTRACT**

Provided is a method and system for replicating a player playing a game similar to a game player and a method and system for instructing the game player in a game play method. According to the method of replicating the player and the method of instructing the player, the game player may receives an instruction how to play a game whose playing method is not well known to the game player. Also, as the player plays online games more than a predetermined number, a game playing engine of his own similar to himself may be made to play a game by proxy and the player can enjoy a team play game by forming a team with the game playing engine.

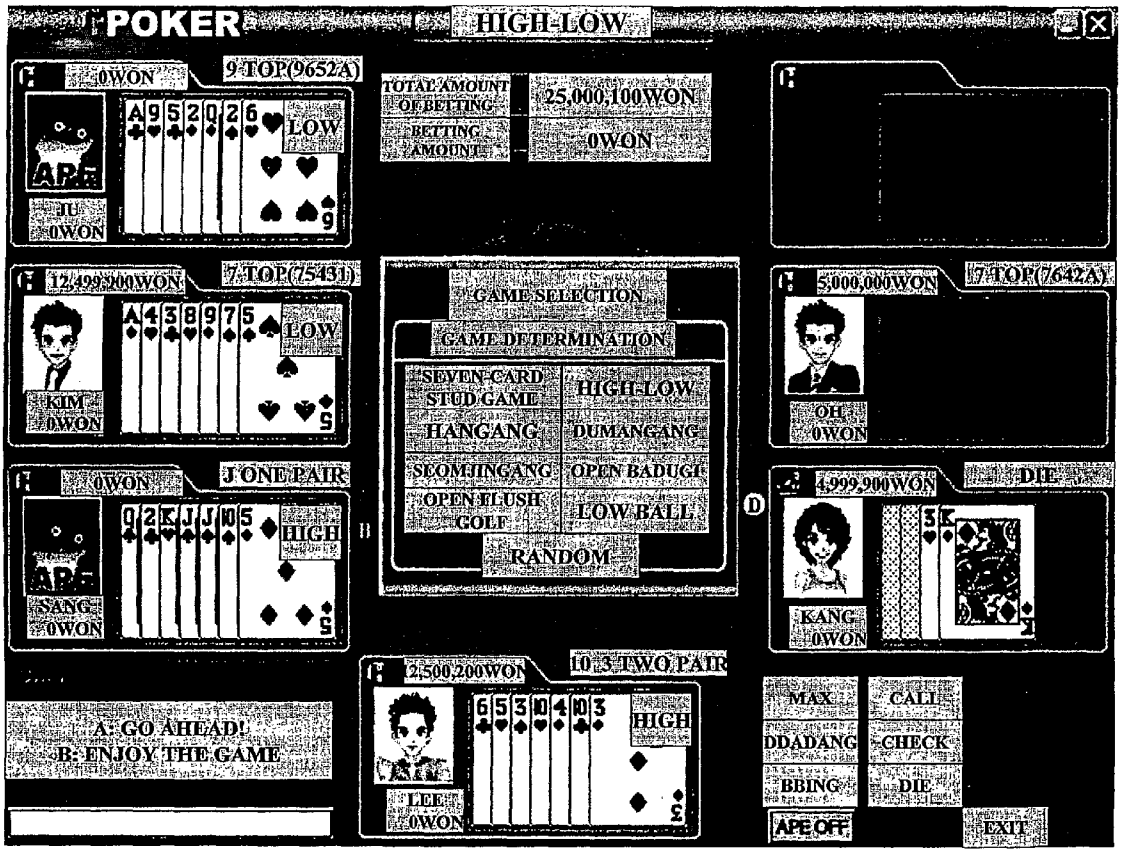


FIG. 1

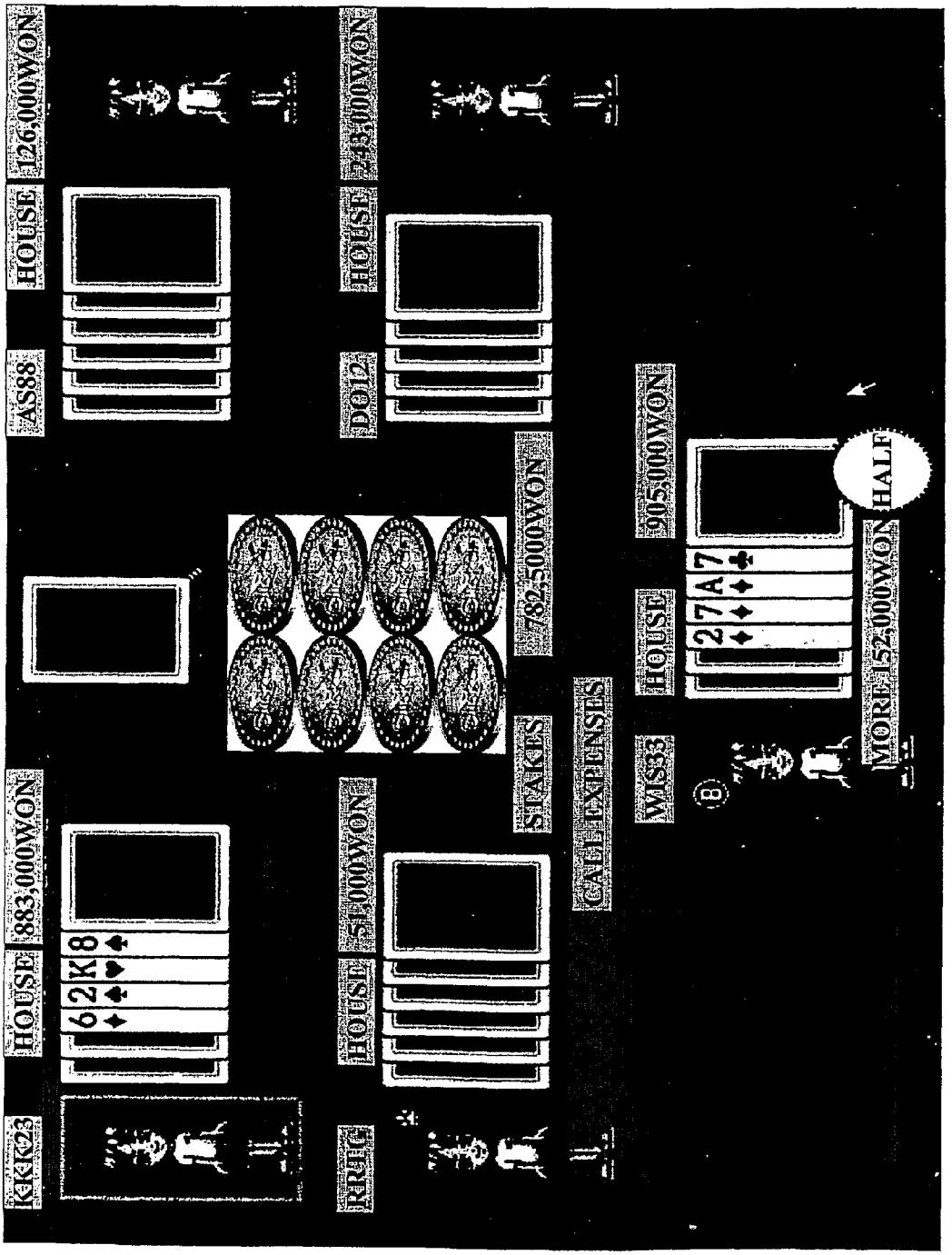

KKK23
HOUSE
883,000WON
62K8
AS88
HOUSE
126,000WON
RR1G
HOUSE
51,000WON
D012
HOUSE
243,000WON
782,500WON
STAKES
CALL EXPENSES
WIS33
HOUSE
905,000WON
27A7
MORE 152,000WON
HALF

FIG. 2

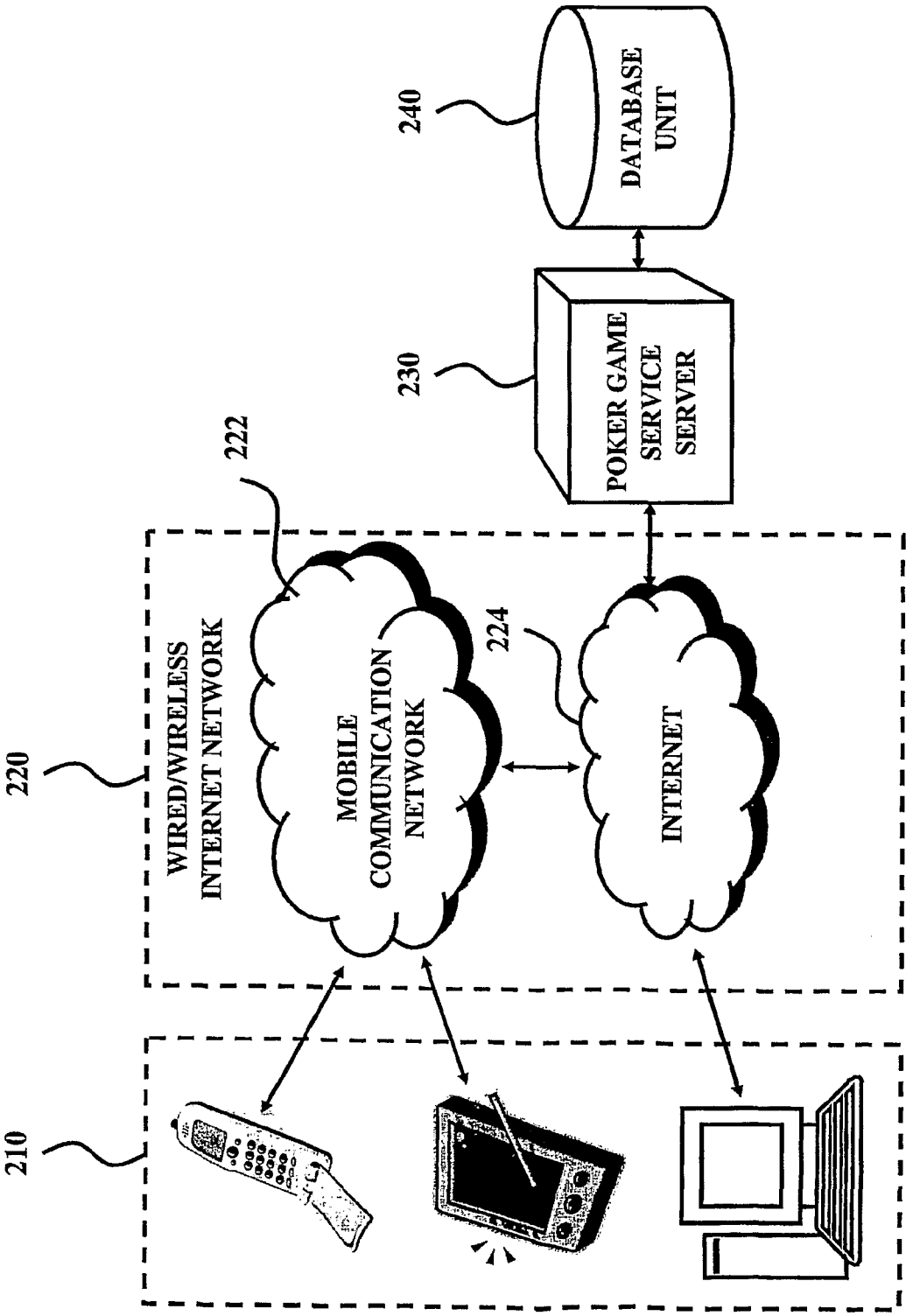

240
DATABASE UNIT
230
POKER GAME SERVICE SERVER
222
224
220
WIRED/WIRELESS INTERNET NETWORK
MOBILE COMMUNICATION NETWORK
INTERNET
210

FIG. 3

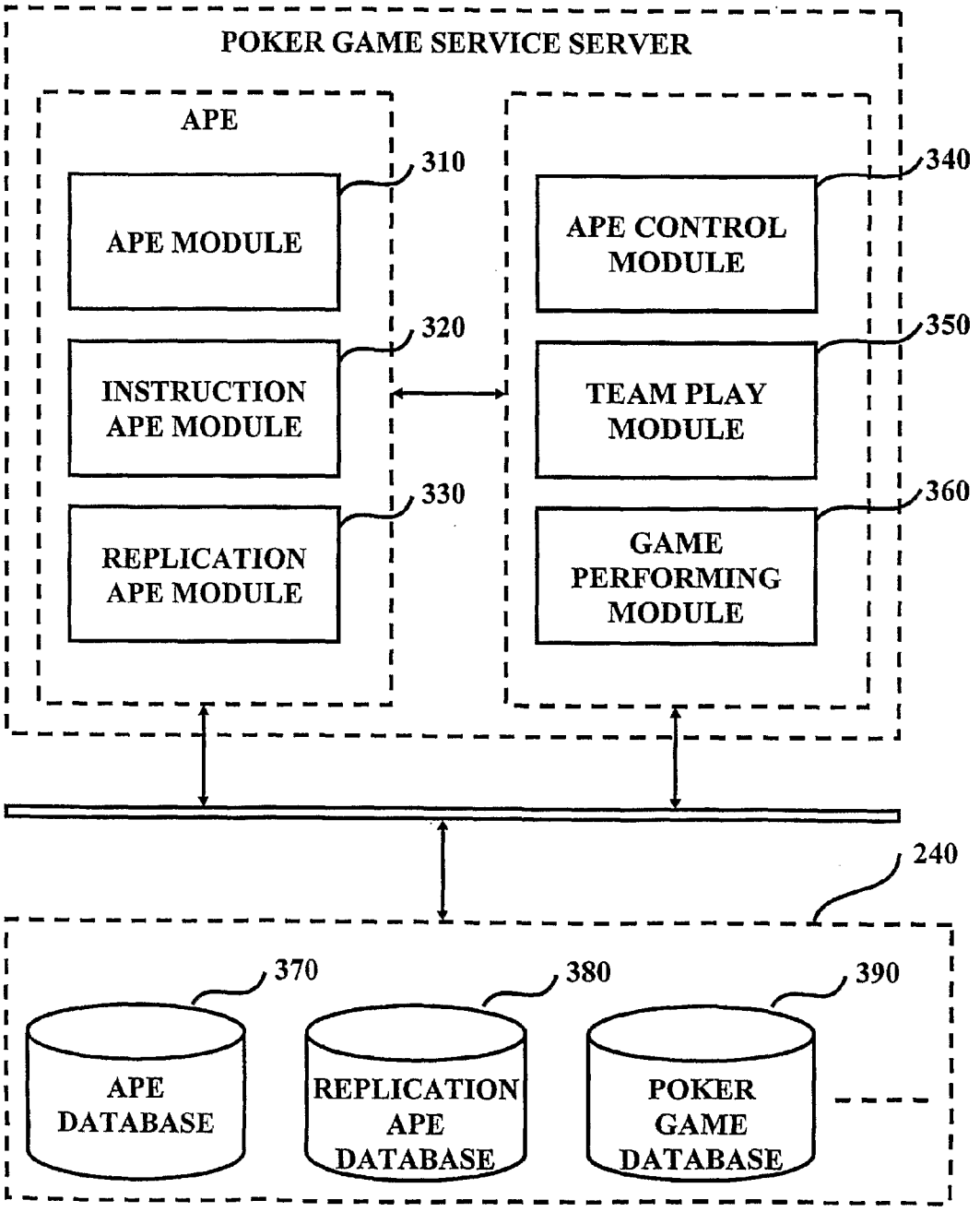

POKER GAME SERVICE SERVER
APE
310
APE MODULE
320
INSTRUCTION APE MODULE
330
REPLICATION APE MODULE
340
APE CONTROL MODULE
350
TEAM PLAY MODULE
360
GAME PERFORMING MODULE
240
370
APE DATABASE
380
REPLICATION APE DATABASE
390
POKER GAME DATABASE

FIG. 4

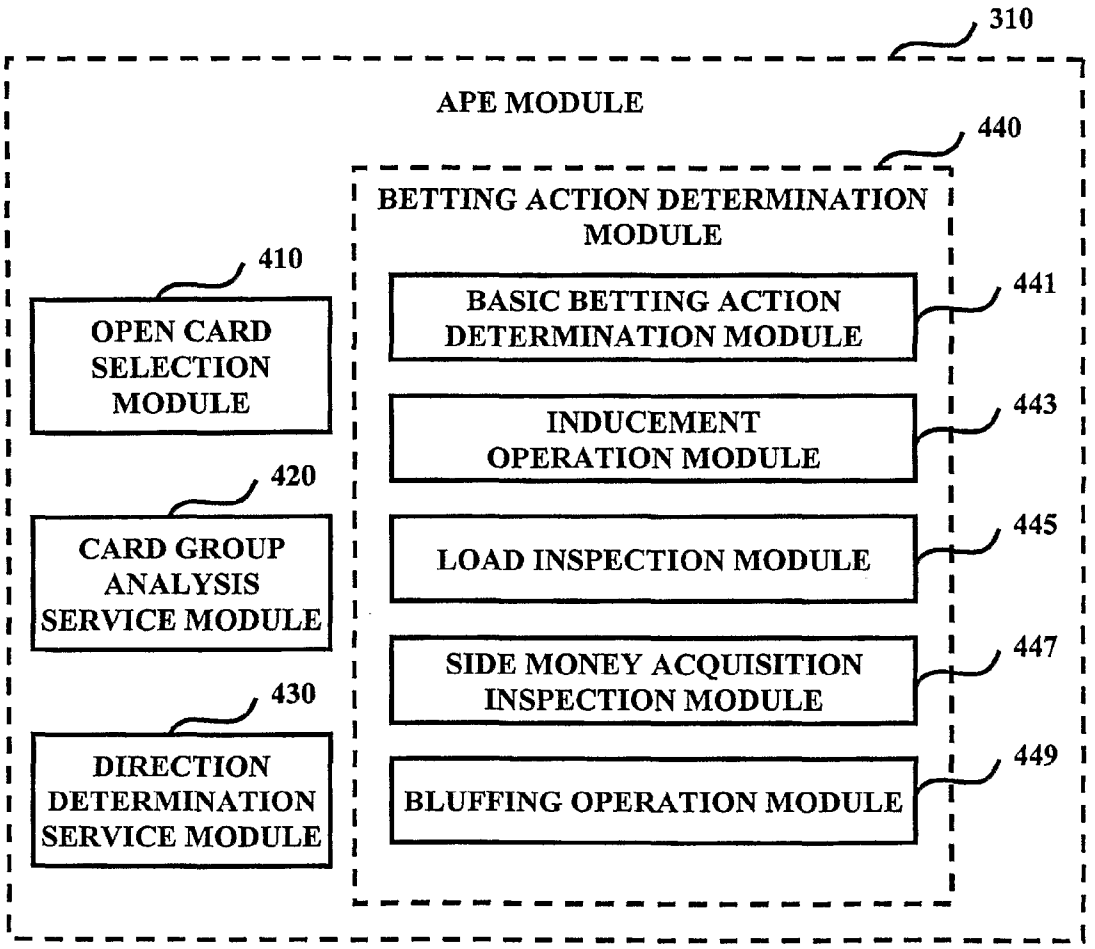

310
APE MODULE
440
BETTING ACTION DETERMINATION MODULE
410
OPEN CARD SELECTION MODULE
420
CARD GROUP ANALYSIS SERVICE MODULE
430
DIRECTION DETERMINATION SERVICE MODULE
BASIC BETTING ACTION DETERMINATION MODULE
441
INDUCEMENT OPERATION MODULE
443
LOAD INSPECTION MODULE
445
SIDE MONEY ACQUISITION INSPECTION MODULE
447
BLUFFING OPERATION MODULE
449

FIG. 5

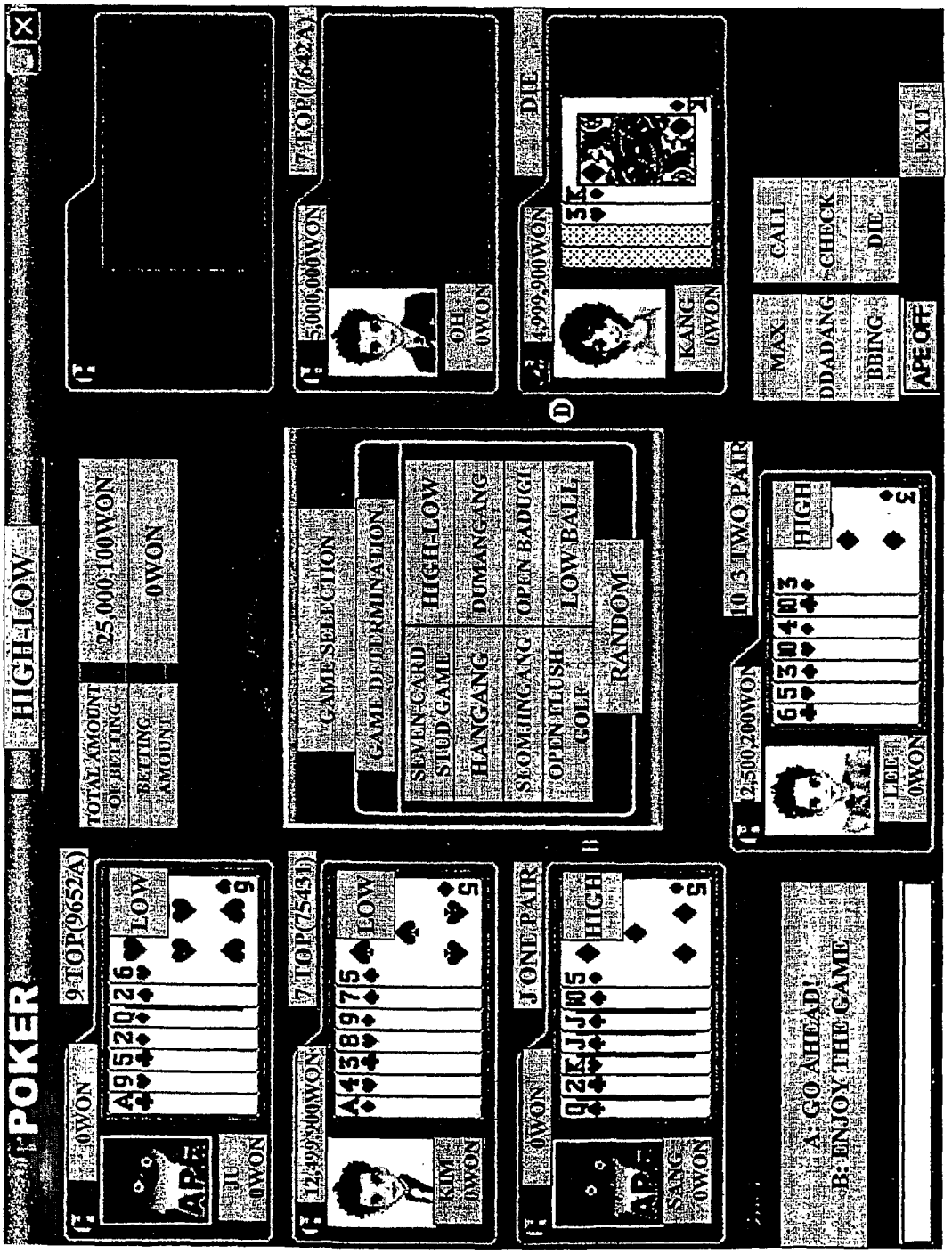

POKER
HIGH-LOW
TOTAL AMOUNT OF BETTING
25,000,100WON
BETTING AMOUNT
0WON
GAME SELECTION
GAME DETERMINATION
SEVEN-CARD STUD GAME
HIGH-LOW
HANGANG
DUMANGANG
SEOMJINGANG
OPEN BADUGI
OPEN FLUSH GOLF
LOW BALL
RANDOM
9 TOP(9652A)
7 TOP(75431)
J ONE PAIR
10 3 TWO PAIR
7 TOP(7642A)
5,000,000WON
4,999,900WON
12,499,900WON
2,500,200WON
LOW
HIGH
JU 0WON
KIM 0WON
SANG 0WON
OH 0WON
KANG 0WON
LEE 0WON
MAX
CALL
DDADANG
CHECK
BBING
DIE
APE OFF
EXIT
A: GO AHEAD!
B: ENJOY THE GAME

FIG. 6

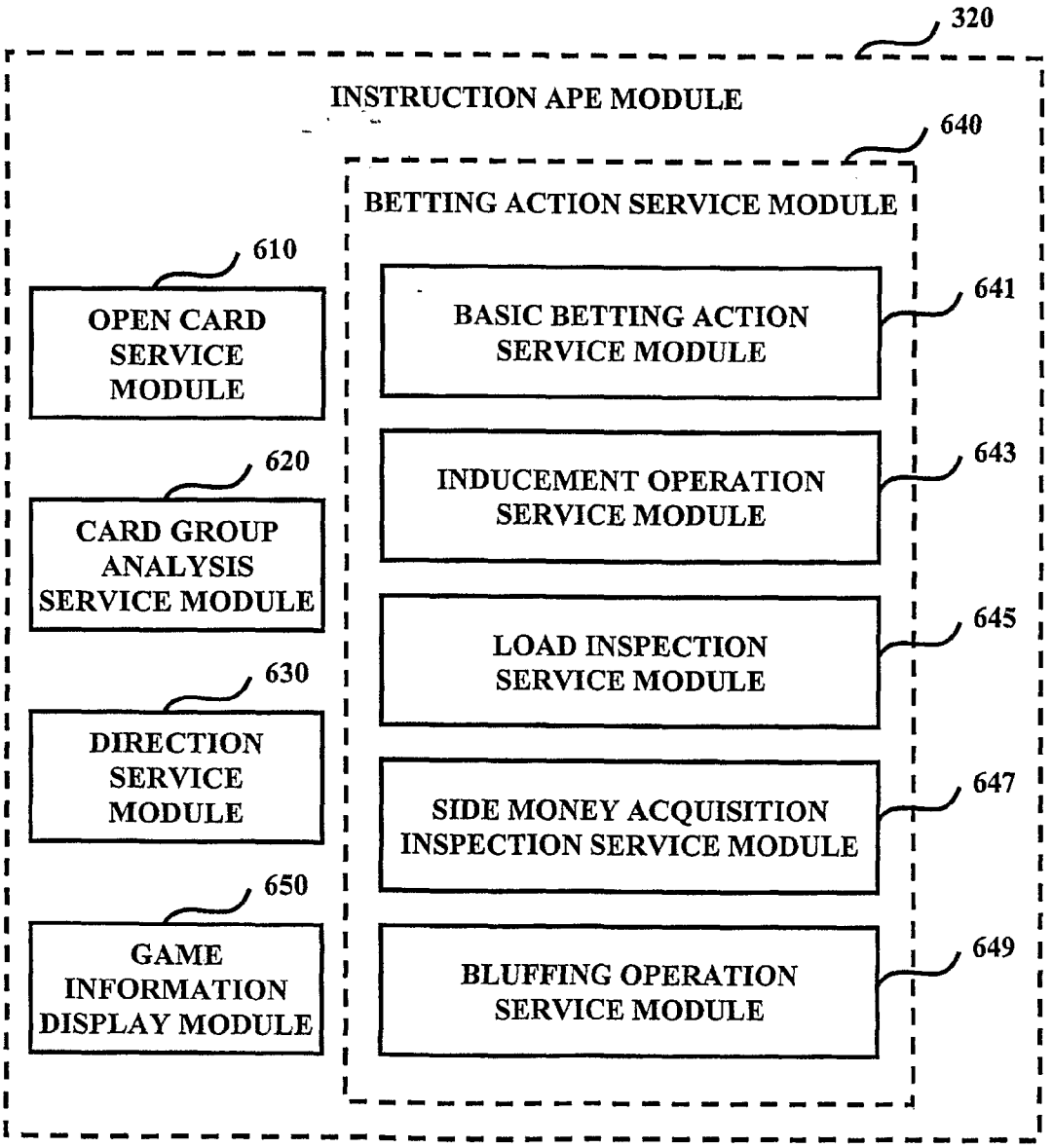

320
INSTRUCTION APE MODULE
640
BETTING ACTION SERVICE MODULE
610
OPEN CARD SERVICE MODULE
620
CARD GROUP ANALYSIS SERVICE MODULE
630
DIRECTION SERVICE MODULE
650
GAME INFORMATION DISPLAY MODULE
641
BASIC BETTING ACTION SERVICE MODULE
643
INDUCEMENT OPERATION SERVICE MODULE
645
LOAD INSPECTION SERVICE MODULE
647
SIDE MONEY ACQUISITION INSPECTION SERVICE MODULE
649
BLUFFING OPERATION SERVICE MODULE

FIG. 7

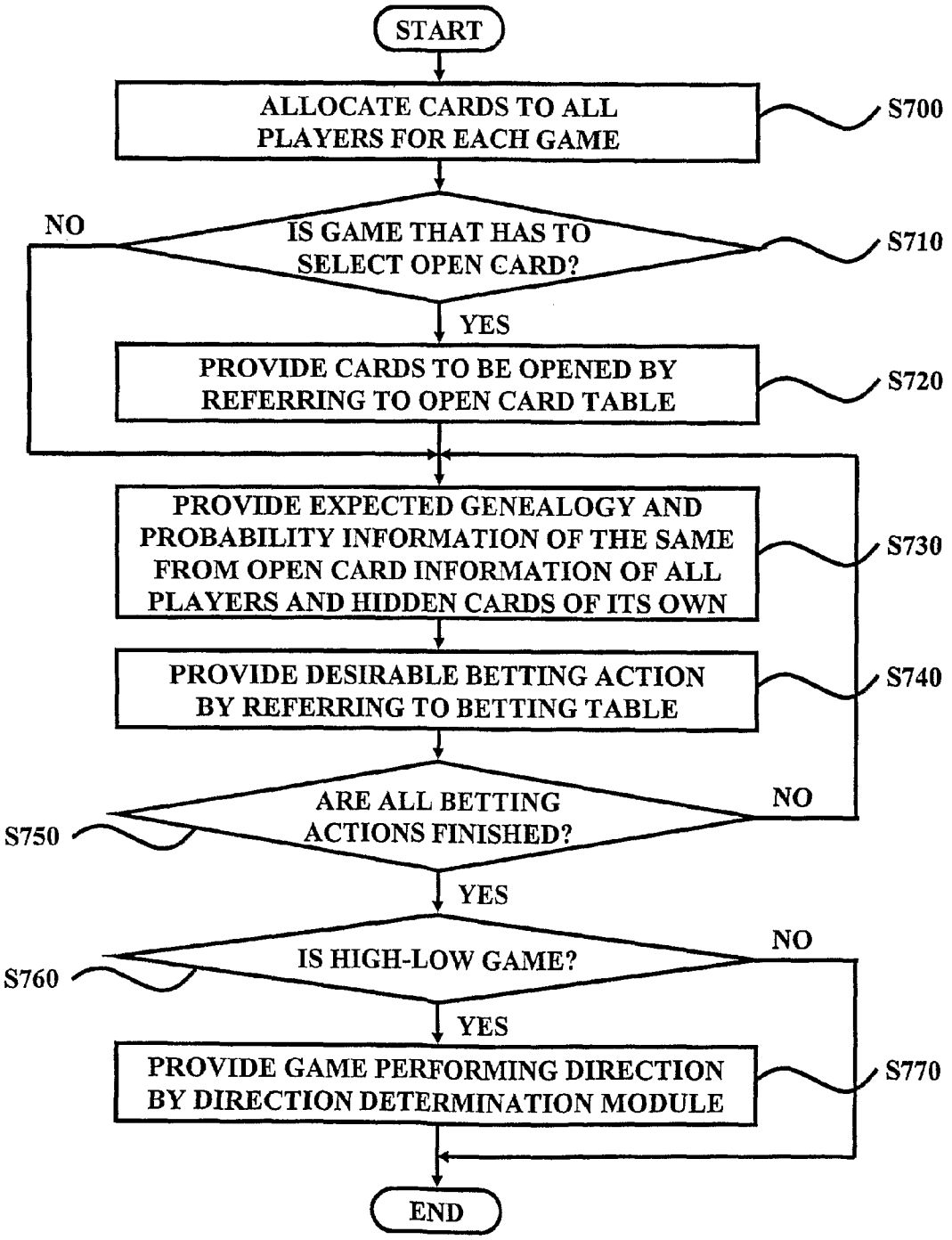

START
ALLOCATE CARDS TO ALL PLAYERS FOR EACH GAME
S700
IS GAME THAT HAS TO SELECT OPEN CARD?
S710
NO
YES
PROVIDE CARDS TO BE OPENED BY REFERRING TO OPEN CARD TABLE
S720
PROVIDE EXPECTED GENEALOGY AND PROBABILITY INFORMATION OF THE SAME FROM OPEN CARD INFORMATION OF ALL PLAYERS AND HIDDEN CARDS OF ITS OWN
S730
PROVIDE DESIRABLE BETTING ACTION BY REFERRING TO BETTING TABLE
S740
ARE ALL BETTING ACTIONS FINISHED?
S750
NO
YES
IS HIGH-LOW GAME?
S760
NO
YES
PROVIDE GAME PERFORMING DIRECTION BY DIRECTION DETERMINATION MODULE
S770
END

FIG. 8

800

BETTING TURN		SURFACE OF CARDS	NUMBER OF BETTING TURNS	NOT MORE THAN SIXTH	STRATEGIC BETTING	SEVENTH	STRATEGIC BETTING
BOSS	THERE IS FIRST GRADE GROUP OF CARDS IN FOLLOWING TURN	FIRST GRADE	1'st BET	CHECK	BLUFFING	CHECK	BLUFFING
			2'st BET	CALL		DIE	
			LAST BET				
		SECOND GRADE	1'st BET	CHECK	BLUFFING	CHECK	BLUFFING
			2'st BET	CALL		DIE	
			LAST BET				
		THIRD GRADE	1'st BET	CHECK		CHECK	
			2'st BET	DIE		DIE	
			LAST BET				
	THERE IS NO FIRST GRADE GROUP OF CARDS DO IN FOLLOWING TURN	FIRST GRADE	1'st BET	CHECK	BLUFFING	CHECK	BLUFFING
			2'st BET	CALL		DIE	
			LAST BET				
		SECOND GRADE	1'st BET	CHECK	BLUFFING	CHECK	BLUFFING
			2'st BET	CALL		DIE	
			LAST BET				
		THIRD GRADE	1'st BET	CHECK		CHECK	
			2'st BET	DIE		DIE	
			LAST BET				

FIG. 9

S900

PLAYER SITUATION

☐ INFORMATIION

SEAT	
NAME	

☐ VISION

☐ PLAYER 0	
■ HIGH CARDS	1
DECIDED GROUP OF CARDS	1.000000, BACK STRAIGHT
EXPECTED GROUP OF CARDS	1.000000, BACK STRAIGHT
VISION GROUP OF CARDS	1.000000, BACK STRAIGHT
■COMPUTED GROUP OF CARDS	
■LOW CARDS	
☐ PLAYER 1	
■ HIGH CARDS	
DECIDED GROUP OF CARDS	1.000000, 8 ONE PAIR
EXPECTED GROUP OF CARDS	0.339655, 9 8 TWO PAIR
VISION GROUP OF CARDS	0.193103, 8 TRIPLE
■COMPUTED GROUP OF CARDS	
■LOW CARDS	
☐ PLAYER 2	
■ HIGH CARDS	
DECIDED GROUP OF CARDS	0.000000
EXPECTED GROUP OF CARDS	0.498276, J TOP (J,10,7,5,4)
VISION GROUP OF CARDS	0.106404, 10 TOP (10.9.7.5.4)
■COMPUTED GROUP OF CARDS	
☐ PLAYER 3	
■ HIGH CARDS	
■ LOW CARDS	
☐ PLAYER 3	
■ HIGH CARDS	
■ LOW CARDS	
DECIDED GROUP OF CARDS	0,000000
EXPECTED GROUP OF CARDS	0.196552, 10 TOP (10,6,4,3,2)
VISION GROUP OF CARDS	0.148522, 9 TOP(9,6,4,3,2)
■COMPUTED GROUP OF CARDS	

RANKING

FIG. 10

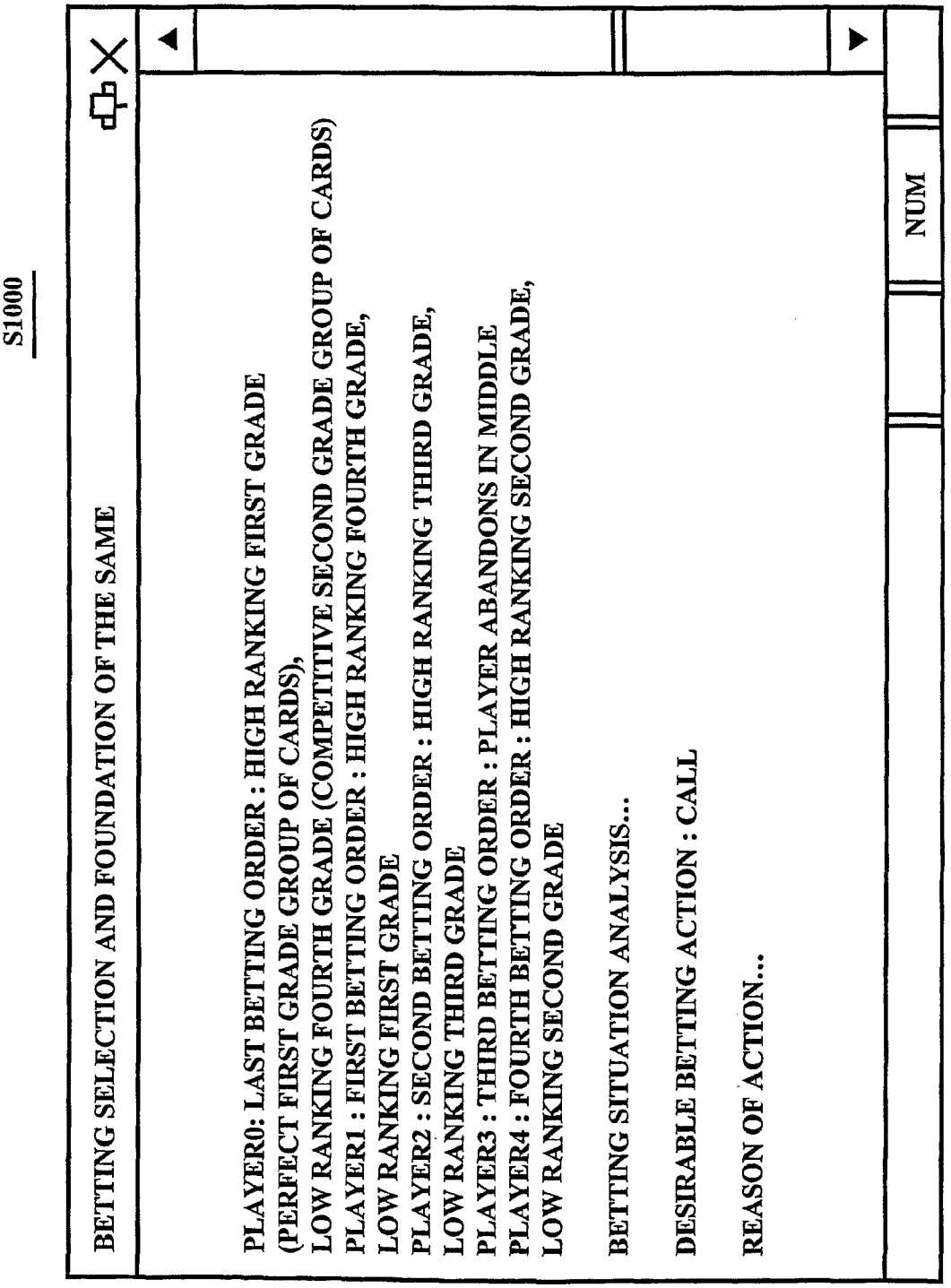

S1000
BETTING SELECTION AND FOUNDATION OF THE SAME
PLAYER0: LAST BETTING ORDER : HIGH RANKING FIRST GRADE
(PERFECT FIRST GRADE GROUP OF CARDS),
LOW RANKING FOURTH GRADE (COMPETITIVE SECOND GRADE GROUP OF CARDS)
PLAYER1 : FIRST BETTING ORDER : HIGH RANKING FOURTH GRADE,
LOW RANKING FIRST GRADE
PLAYER2 : SECOND BETTING ORDER : HIGH RANKING THIRD GRADE,
LOW RANKING THIRD GRADE
PLAYER3 : THIRD BETTING ORDER : PLAYER ABANDONS IN MIDDLE
PLAYER4 : FOURTH BETTING ORDER : HIGH RANKING SECOND GRADE,
LOW RANKING SECOND GRADE
BETTING SITUATION ANALYSIS...
DESIRABLE BETTING ACTION : CALL
REASON OF ACTION...
NUM

FIG. 11

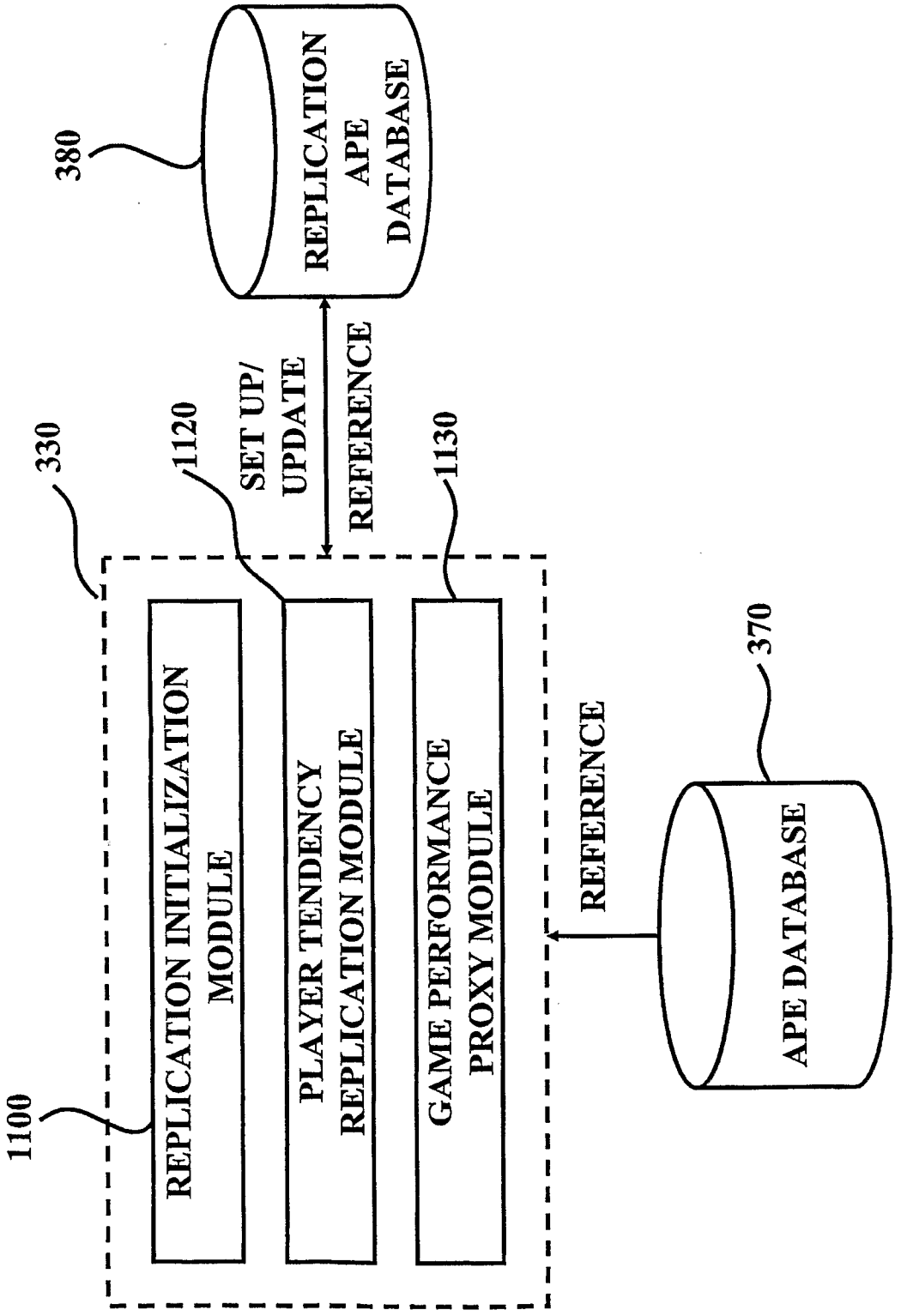

380
REPLICATION APE DATABASE
SET UP/ UPDATE
REFERENCE
330
1120
1130
1100
REPLICATION INITIALIZATION MODULE
PLAYER TENDENCY REPLICATION MODULE
GAME PERFORMANCE PROXY MODULE
REFERENCE
370
APE DATABASE

FIG. 12

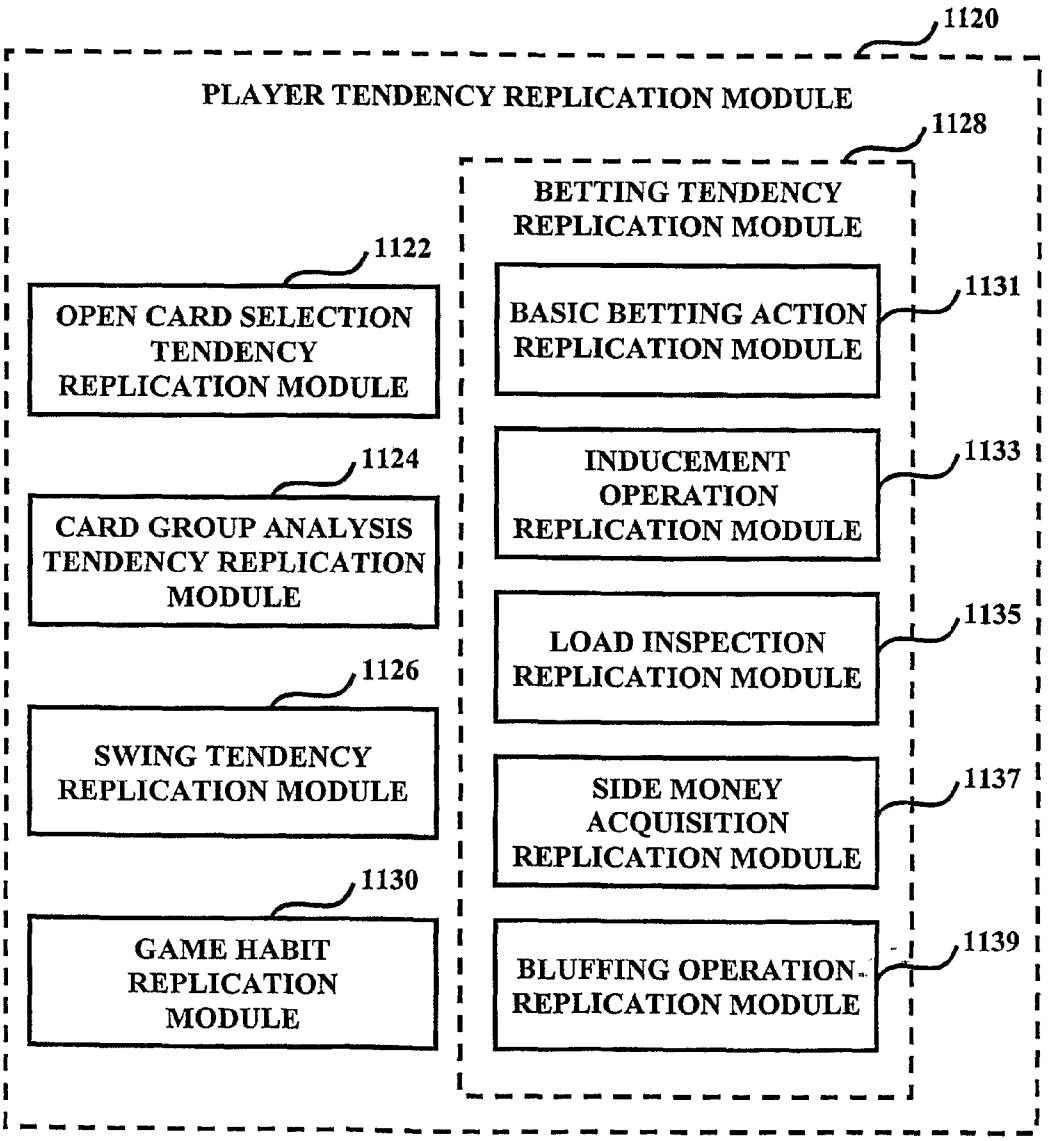

1120
PLAYER TENDENCY REPLICATION MODULE
1128
BETTING TENDENCY REPLICATION MODULE
1122
OPEN CARD SELECTION TENDENCY REPLICATION MODULE
1124
CARD GROUP ANALYSIS TENDENCY REPLICATION MODULE
1126
SWING TENDENCY REPLICATION MODULE
1130
GAME HABIT REPLICATION MODULE
1131
BASIC BETTING ACTION REPLICATION MODULE
1133
INDUCEMENT OPERATION REPLICATION MODULE
1135
LOAD INSPECTION REPLICATION MODULE
1137
SIDE MONEY ACQUISITION REPLICATION MODULE
1139
BLUFFING OPERATION REPLICATION MODULE

FIG. 13

S1300

DIVISION				ACTION
PAIR	NOT LESS THAN PAIR OF 9	2 FLUSH(TWO CARDS OF SAME PATTERN) EXIST	OTHER CARDS EXCEPT PAIR ARE NOT MORE THAN 7	NUMBER OF OPENING ONE OF OTHER EXCEPT PAIR
				NUMBER OF OPENING CARD THAT IS ONE OF PAIR AND HAS DIFFERENT PATTERN
				NUMBER OF OPENING CARD THAT IS ONE OF PAIR AND HAS SAME PATTERN
			OTHER CARDS EXCEPT PAIR NOT LESS THAN 8 NOT MORE THAN 10	NUMBER OF OPENING ONE OF OTHER EXCEPT PAIR
				NUMBER OF OPENING CARD THAT IS ONE OF PAIR AND HAS DIFFERENT PATTERN
				NUMBER OF OPENING CARD THAT IS ONE OF PAIR AND HAS SAME PATTERN
			OTHER CARDS EXCEPT PAIR ARE NOT LESS THAN J NOT MORE THAN K	NUMBER OF OPENING ONE OF OTHER EXCEPT PAIR
				NUMBER OF OPENING CARD THAT IS ONE OF PAIR AND HAS DIFFERENT PATTERN
				NUMBER OF OPENING CARD THAT IS ONE OF PAIR AND HAS SAME PATTERN
		NO 2 FLUSH ELSE	OTHER CARDS EXCEPT PAIR ARE NOT MORE THAN 7	NUMBER OF OPENING ONE OF OTHER EXCEPT PAIR
				NUMBER OF OPENING ONE OF PAIR
				NUMBER OF OPENING THE OTHER OF PAIR
			OTHER CARDS EXCEPT PAIR NOT LESS THAN 8 NOT MORE THAN 10	NUMBER OF OPENING ONE OF OTHER EXCEPT PAIR
				NUMBER OF OPENING ONE OF PAIR
				NUMBER OF OPENING THE OTHER OF PAIR
			OTHER CARDS EXCEPT PAIR ARE NOT LESS THAN J NOT MORE THAN K	NUMBER OF OPENING ONE OF OTHER EXCEPT PAIR
				NUMBER OF OPENING ONE OF PAIR
				NUMBER OF OPENING THE OTHER OF PAIR

FIG. 14

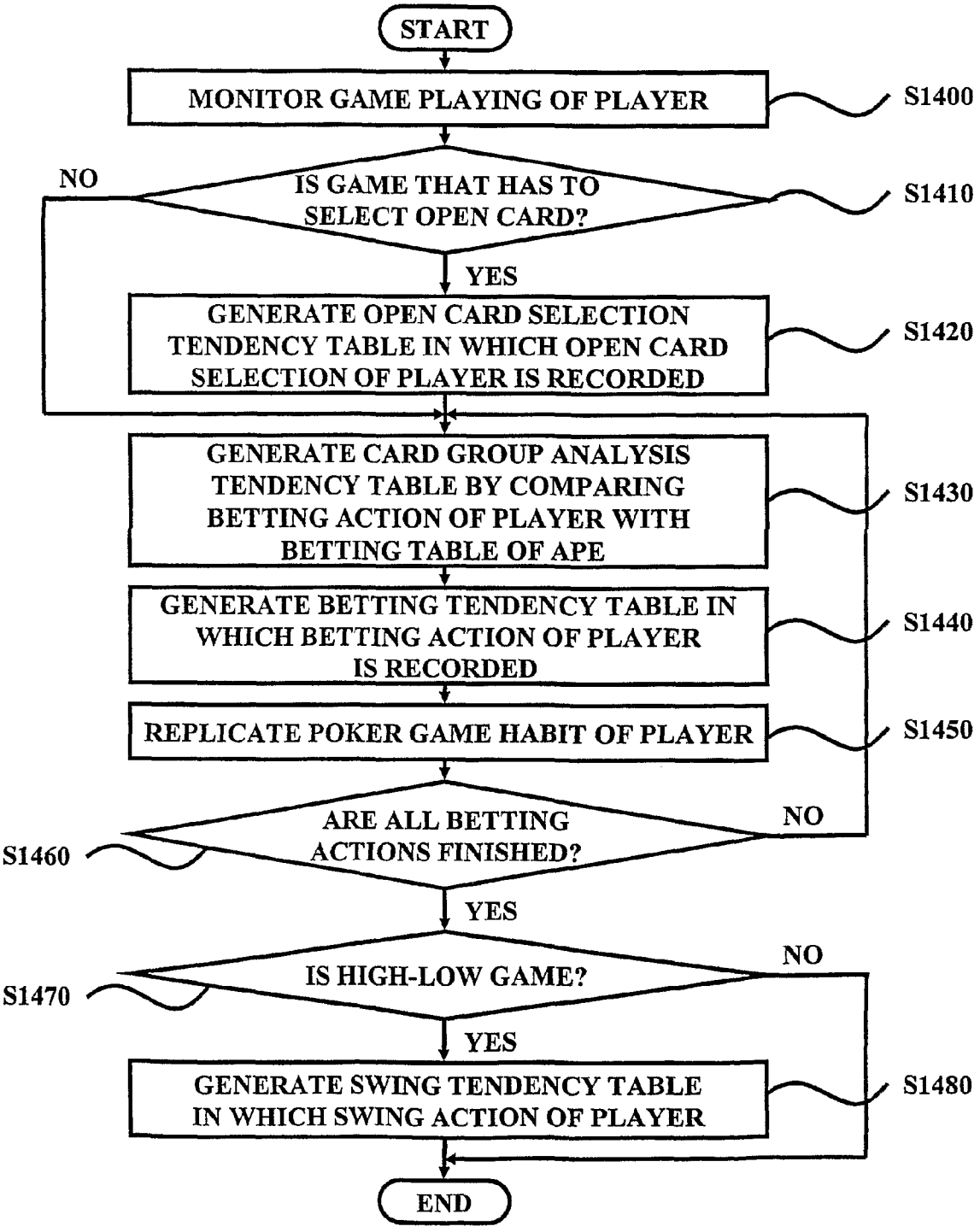
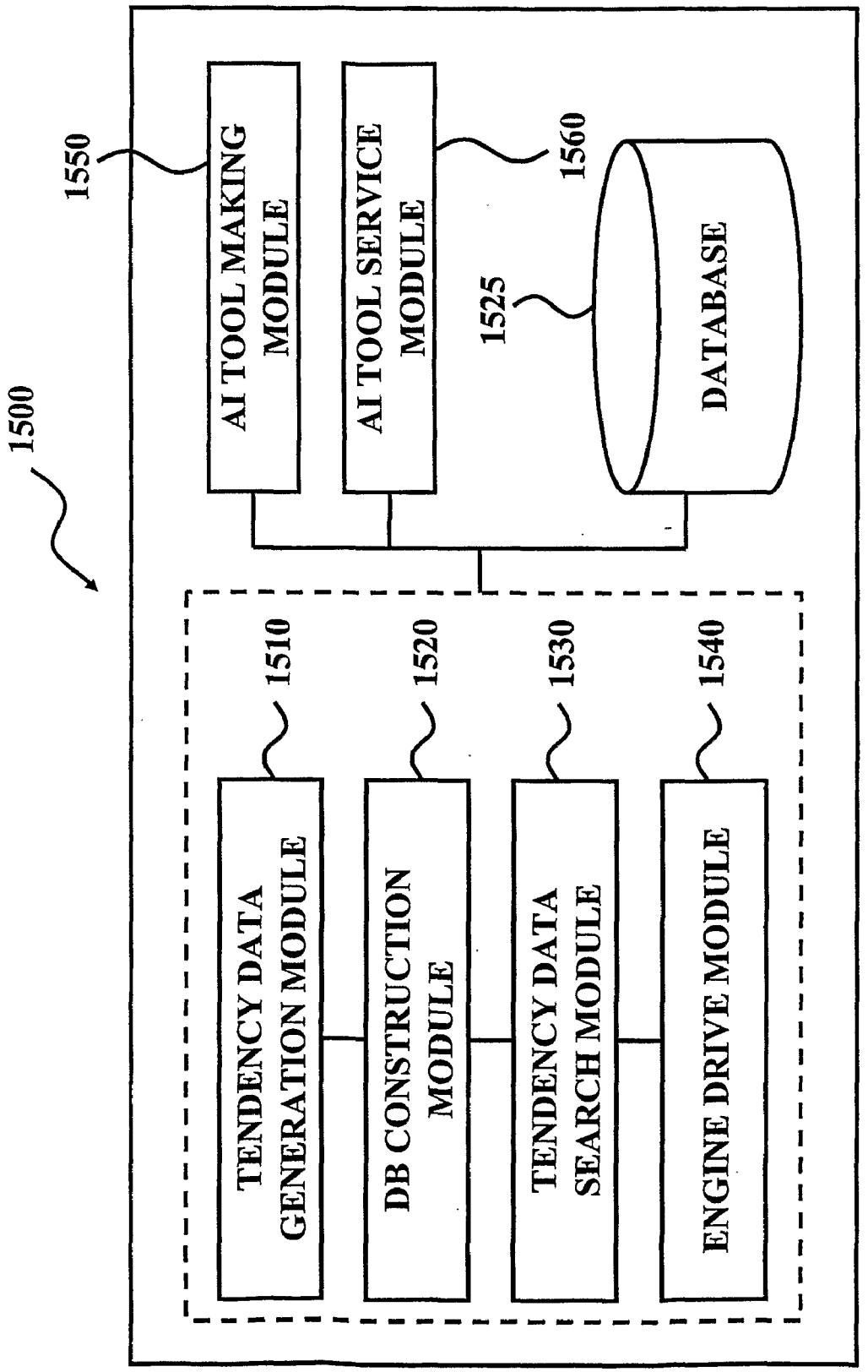

START
MONITOR GAME PLAYING OF PLAYER
S1400
IS GAME THAT HAS TO SELECT OPEN CARD?
S1410
NO
YES
GENERATE OPEN CARD SELECTION TENDENCY TABLE IN WHICH OPEN CARD SELECTION OF PLAYER IS RECORDED
S1420
GENERATE CARD GROUP ANALYSIS TENDENCY TABLE BY COMPARING BETTING ACTION OF PLAYER WITH BETTING TABLE OF APE
S1430
GENERATE BETTING TENDENCY TABLE IN WHICH BETTING ACTION OF PLAYER IS RECORDED
S1440
REPLICATE POKER GAME HABIT OF PLAYER
S1450
ARE ALL BETTING ACTIONS FINISHED?
S1460
NO
YES
IS HIGH-LOW GAME?
S1470
NO
YES
GENERATE SWING TENDENCY TABLE IN WHICH SWING ACTION OF PLAYER
S1480
END

FIG. 15


1500
1550
AI TOOL MAKING MODULE
AI TOOL SERVICE MODULE
1560
1525
DATABASE
1510
1520
1530
1540
TENDENCY DATA GENERATION MODULE
DB CONSTRUCTION MODULE
TENDENCY DATA SEARCH MODULE
ENGINE DRIVE MODULE

METHOD AND SYSTEM FOR REPLICATING AND EDUCATING A GAME PLAYER

TECHNICAL FIELD

[0001] The present invention relates to a method of replicating a player that can play a game similar to the player and instructing the game player in a game playing method and systems of the same, and more particularly, to a game player instruction method and system instructing a game player in a playing method of various games, and a replication and instruction method and system replicating the game play tendency of a player to play a game similar to the player.

BACKGROUND ART

[0002] Currently, owing to the development of communication and network technologies, various content services using the Internet, such as chatting, clubs, games, and shopping malls are provided. Among such various contents services, particularly, the game service field has rapidly increased in development of service and distribution speed, due to the wide demand. Also, owing to the rapid increase of the number of players using game services, game services provided in the past for free are now being converted into charged services, thereby creating a great profit source.

[0003] Now, among various online games provided by wired/wireless access to the Internet, poker is a popular game securing a great numbers of players, along with the "Go-Stop" game.

[0004] Referring to FIG. **1**, five players having game money play a poker game and the stakes of the game increases.

[0005] Generally, poker games are largely divided into two types, stud poker, in which a card is absolutely not changed while playing a game, and draw poker, in which a card may be selected to be changed or discarded while playing a game. In stud poker, there are seven-card stud and seven card high-low split. In draw poker, there are 5-card draw, gang games such as Hangang, Dumangang, and Seomjingang, a poker such as a Badugi game.

[0006] Also, regarding hand ranking, poker games may be divided into a high-only game using a high hand ranking, a low-only game using a low hand ranking, and a high-low game using a high hand ranking and a low hand ranking. Also, the poker game may be divided according to whether some of the cards dealt to players are open to be seen by other players.

[0007] A conventional online poker game shown in FIG. **1** has problems as follows.

[0008] First, in the case a player is going to play a certain game, there is no instruction on how to play the game. Particularly, a beginner of the game has difficulty in playing the game because there is no method of instructing the method of betting, selecting a card, and estimating a card of an opponent.

[0009] Second, in the case a player can not play the game for a while due to a physiological phenomenon or phone call, the player has to go out of a game room where the player is playing the game, resolve the interruption, and come into the game room again. Once the player leaves the game room, there is no guarantee of returning to the same game room again and having the same game circumstances as the player had before, such as game money, opponents, and a game seat.

[0010] Third, in the case a player wants to play a poker game, there is a problem that a group poker game can not be played if a player can not find a willing partner.

[0011] Fourth, in the case an online poker game manager holds a poker tournament, a player can not take part in the tournament if the player can not connect at the time designated by the manager.

[0012] The problems described above are common in other games such as Tetris, Go-Stop, Omok, and Starcraft, in addition to poker. It may be solved by an automatic game engine for instruction, which can intelligently play a game, to instruct a player in all sorts of game playing methods, and an automatic game playing engine replicating the game playing tendency of a player and playing the game similar to the player to act for the player whenever the player needs.

[0013] Also, an automatic game engine, which collects play models according to the play tendency of a player and plays the game according to a play model determined to be optimal in a certain game situation from the collected play models, is much-needed.

DISCLOSURE OF INVENTION

Technical Goals

[0014] To solve the described problems, the present invention provides a method and system for instructing a player in a method of playing a game.

[0015] The present invention also provides a method and system for player replication which can analyze the tendency of a player in playing a game and play a poker game similar to the player.

[0016] The present invention also provides a system and method of controlling an automatic game engine, in which the play pattern of the automatic game engine is determined by considering the level or play style of a player and a game service of high grade, similar to playing a game against a real human player while the game is played with the automatic game engine as an opponent is provided.

[0017] The present invention also provides a system and method of controlling an automatic game engine, in which a specified AI tool is installed in a gamer's terminal according to a request of a player and a game service is independently provided in the gamer terminal under the control of the installed AI tool, thereby providing the game service if the gamer's terminal is not continuously connected to an online game server.

[0018] The present invention also provides a system and method of controlling an automatic game engine, in which the play pattern of a certain group such as programmers, entertainers, and teenaged girls, is extracted and packaged to be framed as an AI tool and the AI tool is downloaded to a gamer's terminal such that a game service performed by a mini automatic game engine replicating a different type of player designated by a player is provided.

Technical Solutions

[0019] According to an aspect of the present invention, there is provided a method of replicating a game player,

including the steps of: installing an automatic game engine in a game terminal: analyzing input tendency of a player playing a game via the game terminal for each game situation; and setting the automatic game engine by using the analyzed input tendency data. The automatic game engine analyzes each game situation, has probability information with respect to the input for each the analyzed game situation, and automatically plays a game based on the probability information. In the step of analyzing the input tendency, game play of a player of a game terminal is monitored at least certain times and input tendency probability information of the player for each game situation is acquired. In the step of setting by using the input tendency data, the probability information for performing a basic game initialized in the automatic game engine is adjusted and updated as the acquired input tendency probability information.

[0020] In a game such as a poker, jangi, or Go-Stop, since state transition occurs according the input of a gamer and next input has to be determined by analyzing the state transition, all of game situations are set as described above and probability information of each game situation selected by the gamer is computed, thereby replicating a player playing a game identical with input tendency of the gamer. The automatic game engine has probability information provided by the system, which is previously properly distributed by analyzing a game by a game system developer. The automatic game engine is adjusted and updated by input tendency probability information obtained by monitoring a game played by the player, and the input tendency probability information is used in determining desirable input in playing a game by proxy.

[0021] The present invention provides a game method via a replicated player, including the steps of: inquiring of a player gamer whether the player will participate in the game via game terminal equipped with an automatic game engine replicating the game tendency of the player; selecting at least one of the player and the automatic game engine as a player playing the game in case that participating in the is allowed by inquiring participation willing; and playing the game by the selected player.

[0022] The wherein replicated automatic game engine has the input of the player and probability information of the input for each game situation and performs the input based on the probability information under the same game situation in case of playing the game by proxy. Also, the present invention provides a method of replicating a game player, including the steps of: installing an automatic game engine; receiving a command for selecting a game via a player interface; displaying the selected game via the player interface; receiving a command for replicating a player of the selected game from the player interface; analyzing the input tendency of the player playing the game via the player interface by the received command of replicating; and generating a replicated auto game engine by setting the provided automatic game engine by using the analyzed input tendency data. The automatic game engine in which probability information on input for each game situation for basic game play is initialized automatically plays the game based on the probability information. In the step of analyzing the input tendency, input tendency probability information of the player is acquired based on the input performed by the player under the each game situation by monitoring the game play of the player more than a certain number. In the step of setting by using the input tendency data, the probability information initialized in the automatic game engine is adjusted and updated by using the acquired input tendency probability.

[0023] Also, the present invention provides a game method via a replicated player, including the steps of: installing an automatic game engine replicating game tendency of a player; receiving a command for selecting a game via player interface; displaying the selected game via the player interface; receiving a command for selecting a player of the selected game from the player interface; selecting one of a command of playing the game via the player interface and a command of playing the game via the replicated automatic game engine; and interactively playing the selected game according to the received game play command.

[0024] Also, the present invention provides a game player replication system, including: a terminal of a player, for requesting one of the replication of a player and the proxy play of a game; an automatic game engine for replication, in the case replication request of the player is received, the engine monitoring the player playing a game and acquiring probability information with respect to the game tendency of the player, and in the case game play proxy module request is received, the engine playing the game for the player based on the acquired probability information; a game engine for generating the automatic game engine for replication, controlling proxy playing of the game, and providing all sorts of modules and game environments; and a database unit storing information on a plurality of players and game information and providing the information to the automatic game engine for replication.

[0025] According to another aspect of the present invention, there is provided a method of instructing a game player, including the steps of: installing an automatic game engine for instruction in game terminal; acquiring an optimized input for each game situation of a player playing a game via the game terminal via the automatic game engine for instruction; and displaying the acquired input data to the player. The automatic game engine for instruction analyzes each game situation, has the optimized input information for each game situation for basic game play, and provides the optimized input information to the player according to the analyzed game situation. The optimized input information may include input information with respect to each game having at least two difficulties, which is different from each other.

[0026] Also, the present invention provides an apparatus for instructing a game player, including: an automatic game engine for instruction, provided in a game terminal; a game information acquisition module acquiring optimized input for each game situation of a player playing a game via the game terminal via the automatic game engine for instruction; and a display module displaying the acquired input data to the player.

[0027] Also, the present invention provides a system for instructing a game player, including: a terminal of a player for request of playing a game for instruction; an automatic game engine, in the case the request of playing the game for instruction is received, having input information optimized for each game situation for basic game play, analyzing each

the game situation, providing the input information optimized according to the analyzed game situation to the game terminal; a game engine for controlling the operation of the automatic game engine for instruction and providing all sorts of modules and game circumstances required in playing the game for instruction; and database unit for storing information on a plurality of players and game information and providing the information to the automatic game engine for replication.

[0028] A method of replicating a card player, according to a preferable embodiment of the present invention, including the steps of: installing an automatic game engine for replication in a terminal of a player playing a card game; monitoring the card game played by the player in the case a replication request of the player exists; replicating tendency of card analysis with respect to plates of the player and plates of opponents by using the automatic game engine for replication, based on the monitoring; and replicating betting tendency of the player by using the automatic game engine for replication, based on the monitoring.

[0029] A system of replicating a card player, according to a preferable embodiment of the present invention, including: a terminal of a player for a request of replicating a player or playing a game by proxy; a replication automatic game engine replicating the card group analysis tendency or betting tendency of the player by monitoring the player playing a card game in the case the request of replication the player is received and plays the game for the player in the case the request of playing a game by proxy; a game engine controlling the generation and game playing by proxy of the replication automatic game engine and providing all sorts of required modules and game environments; and a database unit storing information on a plurality of players and card game and providing the information to the replication automatic game engine.

[0030] The replication automatic game engine includes: a replication initialization module setting an initial value of a replication database storing all sorts of information used by the replication automatic game engine; a player tendency replication module replicating the game tendency of the player and storing the game tendency input data in the replication database; and a game play proxy module searching the game tendency input data from the replication database and playing a card game by proxy based on the game tendency input data.

[0031] A method of instructing a player in a card game, according to a preferable embodiment of the present invention, including the steps of: generating an automatic game engine for instruction in card game in the case a request of playing a game for instruction in card game is received from a player of a card game terminal unit; analyzing a group of cards of the player and opponent players by using the card instruction automatic game engine while the card instruction game is played and providing an expected genealogy and an expected genealogy probability of the player and the opponent players to the card game terminal unit; and providing a desirable betting activity of the player to the card game terminal unit by using the card instruction automatic game engine according to the card analysis result.

[0032] The card instruction automatic game engine has input information optimized for each game situation in order to play a basic game, analyzes each card game situation, and provides the input information to the card game terminal unit according to the analyzed card game situation.

[0033] A system for instructing a card player, according to a preferable embodiment of the present invention, including: a card game terminal unit of a player, for performing a request of playing a game for instructing a card game; an automatic game engine for instruction, in the case the request of playing the game for instructing a card game is received, having input information optimized for each game situation for basic game play, analyzing the each card game situation, and providing the input information optimized for each analyzed card game situation to the card game terminal unit; a game engine for controlling the operation of the instruction automatic game engine and providing all sorts of modules and game environments required in playing the game for instruction in card game; and a database unit storing information on a plurality of players and card games and providing the information to the instruction automatic game engine.

BRIEF DESCRIPTION OF DRAWINGS

[0034] FIG. **1** is a diagram illustrating the progress of an online poker game using a computer;

[0035] FIG. **2** is a block diagram schematically illustrating an online poker game system according to a preferable embodiment of the present invention;

[0036] FIG. **3** is a block diagram illustrating the internal configuration of a poker game service server according to the preferable embodiment of a present invention;

[0037] FIG. **4** is a block diagram illustrating the configuration of an APE module of FIG. **3**;

[0038] FIG. **5** is a diagram illustrating the progress of a poker game based on an online APE;

[0039] FIG. **6** is a block diagram of an APE module for instruction in poker, according to a preferable embodiment of the present invention;

[0040] FIG. **7** is a flow chart illustrating a method of playing a poker game for instruction in poker;

[0041] FIG. **8** is a betting table for determining the betting activity of an APE for instruction in poker, according to an embodiment of the present invention;

[0042] FIG. **9** is a diagram illustrating an example of analysis on cards provided by the APE for instruction in poker, to a player;

[0043] FIG. **10** is a diagram illustrating analysis on betting situation and betting activity recommendation of the APE for instruction in poker, according to an embodiment;

[0044] FIG. **11** is a configuration diagram illustrating the configuration of an APE module for replication, according to an embodiment of the present invention;

[0045] FIG. **12** is a block diagram of a module for replicating the tendency of a player, according to a preferable embodiment of the present invention;

[0046] FIG. **13** is an open card selection table for replicating the tendency of a player while selecting an open card, according to an embodiment of the present invention;

[0047] FIG. **14** is a flow chart illustrating a method of generating an APE for replication, according to an embodiment of the present invention; and

[0048] FIG. **15** is a configuration diagram illustrating an automatic game engine control apparatus according to an embodiment of the present invention.

BEST MODE FOR CARRYING OUT THE INVENTION

[0049] The details on the described goals, technical construction, and effects will be clearly understood by detailed description based on the drawings illustrating preferable embodiments of the present invention.

[0050] Hereinafter, the preferable embodiments of the present invention will be described in detail with reference to the attached drawings.

[0051] FIG. **2** is a block diagram schematically illustrating an online poker game system according to a preferable embodiment of the present invention.

[0052] The present invention may be applied to many games such as Tetris™, Go-Stop™, Omok™, and Starcraft™, in addition to a poker game, in which a game playing engine with high intelligence can instruct a player in playing a game and analyze the play method of the player in order to replicate the game play method of the player. The game playing engine is called as an automatic playing engine (APE). The APE sets each game situation and has desirable input information for each game situation. The input information may be differently set according to the difficulty of a game. Detailed input action is provided to the player according to the each game situation by using the APE, thereby instruction in playing the game and replicating the game play method of the player. Hereinafter, a poker game will be described as an example to which the APE is applied according to an embodiment of the present invention, arbitrarily chosen from various possible games.

[0053] In a poker game, an APE analyzes cards of a player himself and an opponent and betting activity of the opponent and automatically plays an online card game such as a poker game, based on the analyzed information.

[0054] Referring to FIG. **2**, an online poker game system **200**, according to a preferable embodiment of the present invention, includes a poker game terminal unit **210**, a wired/wireless connection to Internet network **220**, a poker game service server **230** equipped with the APE, and a database unit **240**.

[0055] In embodying the present invention, the hardware environment may be embodied by a server/client type, via a connection between PCs without a server based on Peer-to Peer (P2P) technology, or a mixed method of two methods. Hereinafter, the present invention will be described based on the server/client type only for convenience of description.

[0056] The poker game terminal unit **210** is a terminal device in which a program for accessing a poker game service via a wired/wireless connection to Internet in order to receive a poker game service is installed, such as a notebook, a personal communication service (PCS) phone, a hand-held PC, a global system for mobile (GSM) phone, a wideband CDMA phone, a CDMA-2000 phone, and a mobile broadband system (MBS) phone. In this case, the MBS phone indicates a next-generation mobile phone that will be used in the fourth-generation ALL-IP system and now being developed.

[0057] The wired/wireless connection to the Internet network **220** not only includes a mobile communication network **222** and Internet **224** but also indicates a global open type network structure providing TCP/IP protocol and various services existing in the higher layers, such as HyperText Transfer Protocol (HTTP), Telnet, File Transfer Protocol (FTP), Domain Name System (DNS), Simple Mail Transfer Protocol (SMTP), Simple Network Management Protocol (SNMP), Network File Service (NFS).

[0058] Also, the mobile communication network **222** additionally includes elements for transmitting/receiving wireless packet data, such as an access gateway and packet data serving node (PDSN) in addition to a base station (BS), a mobile telephone switching office (MTSO), and a home location register (HLR).

[0059] On the other hand, since the described poker game terminal unit **210** and the wired/wireless connection to the Internet network **220** may be embodied by using a conventional type or a simple change of the same, the detailed description will be omitted.

[0060] The poker game service server **230** provides a poker game service based on an APE for instruction in poker or a poker game service based on an APE for replicating a player, according to the present embodiment, to the poker game terminal unit **210**. In this case, the APE is an artificial intelligence program for playing a poker game by itself, which includes a plurality of modules coded into a predetermined program language.

[0061] The APE selects a card to be discarded or to be open according to the type of poker game, analyzes cards, and determines basic betting activities according to the rules of the poker game and the analysis result on cards of the opponent player.

[0062] The detailed functions of the APE for instruction and the APE for replication, according to the present embodiment, will be described with reference to the attached drawings FIGS. **6** and **11**.

[0063] The database unit **240** stores basic personal detail information of a player associating himself with a poker game service based on the APE according to the present embodiment, such as ID, password, name, and address of the player, and poker game data required in performing various poker games provided by the poker game service server **230**.

[0064] FIG. **3** is a block diagram illustrating the internal configuration of a poker game service server according to the preferable embodiment of a present invention.

[0065] The poker game service server **230** according to a preferable embodiment of the present invention includes an APE engine formed of an APE module **310**, an instruction APE module **320**, and a replication APE module **330** and a game engine formed of an APE control module **340**, a team play module **350**, and a game playing module **360**. Though not shown in FIG. **3**, an element performing a function identical with or similar to a conventional poker game server is also included.

[0066] The APE **310** is an element performing an essential function in the poker game service based on APE, which is

a sort of a program having an artificial intelligence to play a poker game against a human player by itself. Namely, the APE module **310** selects a card to be discarded and a card to be open according to the sort of a poker game, analyzes cards, and determines bets by analyzing game information such as expected card hand ranking of an opponent and the number of betting round. In this case, the hand ranking is a term generally used in a poker game, which indicates a group of cards in which a certain shape, number, and sequential number are recorded.

[**0067**] The APE module **310** plays a game by referring to an APE database **370** in which proper reactions with respect to the type of poker game and all game situations. The instruction APE module **320** plays a game of poker for instruction, based on values stored in the APE database **370**. The replication APE module **330** initializes information values included in a replication APE database **380** by the values stored in the APE database **370** and updates information values included in the replication APE database **380** by the values included in the APE database **370**.

[**0068**] The internal configuration of the instruction APE module **310** and replication APE module **330** according to an embodiment of the present invention, for each function, will be described in detail in the description on FIGS. **6** and **11**.

[**0069**] On the other hand, the APE module **310** performing the various functions sets all sorts of indexes in the step of designing a program, thereby being formed of a plurality of the APE modules **310** which have a different level of artificial intelligence from each other. Accordingly, according to the level of an opponent requesting a game against an APE, an APE with a proper level is possible, thereby increasing the entertainment value of the game.

[**0070**] The APE control module **340** controls loading the APE module in the case a player requests an APE play, replication, or instruction.

[**0071**] The team play module **350** supports various team play functions such as player team versus APE team, (player+APE) team versus (player+APE) team, player team versus (player+APE) team, and APE team versus (player+APE) team, in addition to a function of forming a team by players accessing the poker game service server **230**.

[**0072**] Also, various team plays are possible by using the replication APE according to an embodiment of the present invention, such as player team versus replication APE team, (player+replication APE) team versus (player+replication APE) team, player team+(player+replication APE) team, and replication APE team versus (player+replication APE) team. The replication APE may be corresponding to a replication APE of a player performing the team play or a player that allows the replication APE to act for the player instead of performing the team play. A room master opening a game room may select the sort of the team play and the number of players for one team, such as 2:2, 3:3, and 4:4.

[**0073**] The game playing module **360** performs each poker game according to various rules of the poker game.

[**0074**] FIG. **4** is a block diagram illustrating the configuration of the APE module of FIG. **3**.

[**0075**] The APE module **310** according to an embodiment of the present invention includes an open card selection module **410**, card group analysis service module **420**, a direction determination service module **430**, and a betting activity determination module **440**.

[**0076**] The open card selection module **410** discards one of three or four cards provided at the beginning in a game such as seven-card stud, seven-card stud high-low, and six-two card high-low and selects a card to be open from the rest. The open card selection module **410** selects an open card in the direction of hiding an expected hand ranking from an opponent player. For example, in the case of having a card with a high hand ranking, the open card selection module **410** selects a card to hide a pair of cards in the case the pair of card exists in three cards and hide a card with the same pattern in the case the pattern of two cards is the same, in order not to expose the hand ranking. Of course, in the case of having a card of low hand-ranking, the lowest number is selected in order not to expose the highest of the low cards.

[**0077**] The card group analysis service module **420** analyzes open cards of an opponent player, the number of unopened cards, and own hidden cards of the APE module **310**, extracts at least one expected genealogy, and computes expected genealogy probability for each expected genealogy. In this case, the expected genealogy probability is computed as a probability of each of the unopened cards required in a relevant genealogy for each genealogy condition. For example, in the case unopened cards are 15, a card of 10 is open, and one card is hidden, the expected genealogy probability of 10 triple may be 2/15.

[**0078**] Also, the card group analysis service module **420** has an analysis module built-in for each stud poker and draw poker, extracts an expected genealogy for each high game and low game, and computes an expected genealogy probability. Also, the card group analysis service module **420** sets an expected probability with a highest expected genealogy probability as a present expected genealogy for each high game and low game.

[**0079**] The betting activity determination module **440** determines the betting activity of the APE module **310** by using card information and the betting information of opponent players, analyzed by the card group analysis service module **420**. The betting activity determination module **440** includes a basic betting activity determination module **441**, an inducement operation module **443**, a load inspection **445**, a side money acquisition inspection module **447**, and a bluffing operation module **449**.

[**0080**] The basic betting activity determination module **441** performs a bet or a raise in the case it is determined by the card group analysis service module **420** that the APE module **310** has a highest card from players. In the case the APE module **310** has a second card that can compete with a first player or a vision card with a high probability of win, the basic action determination module **441** performs a call. In the case the APE module **310** has a card less than third, the basic action determination module **441** performs a die. In this case, detailed description on betting terms generally used in a poker game will be omitted. The vision card indicates a card that does not have a high genealogy now but may have a high genealogy if acquiring a certain card.

[**0081**] On the other hand, in a real poker game, a betting method with a high difficulty is used according to all sorts

of additional factors such as bluffing that a game player bluffs, psychological factors, the betting tendency of opponent players, and stakes. Accordingly, since various additional factors can not be reflected by using the basic betting activity determination module **441**, the betting activities with a high difficulty are performed by using four additional betting activity determination modules which will be described.

[**0082**] The inducement operation module **443** prevents the abandonment of other players in the middles, caused by high probability that the cards included in the APE module **310** will be first. Namely, in the case the basic betting activity determination module **441** determines a betting activity such as a bet and a raise because a probability that the cards of the APE module **310** becomes first is more than a previously set figure and a probability that following ranked players becomes first is less than an set figure, the inducement operation **443** lowers the degree of betting activity. Namely, the betting activity such as a bet and raise determined by the basic betting activity determination module **441** is changed into a check (minimum unit betting), ping, or a call (betting the same amount of money as a previous better), which are lower than the bet or the raise by one grade).

[**0083**] The load inspection module **445** performs a function of changing a betting activity in the case the cards of the APE module **310** are vision cards, more than two raises from following ranked players are expected, a probability that the APE module **310** has a vision card is notably low. Namely, the basic betting activity determination module **441** determines a betting activity as a call in the case the card of the APE module **310** is vision card, it is changed into a betting activity as a die in the case the change of betting activity is determined by the load inspection module **445**. Of course, the number of raises expected from a certain following players or a probability that the APE module **310** has a vision card may be changed according to the grade of the poker game.

[**0084**] The side money acquisition inspection module **447** performs a function of changing a betting activity in the case it is determined that the cards of the APE **310** are under second but side money may be acquired by using the rules of table money selected by most of on/off line poker game. In this case, the table money indicates a cyber money laid by a player in order to perform a poker game, which can not be added anymore before the game is finished.

[**0085**] In this case, the side money indicates a difference between the amounts of the largest betting money and own betting money in the case all poker money is betted, lack of poker money occurs, and a call betting is kept. A player generating side money may take the amount of money that he betted if he won a game. Of course, since a second player he may take the side money of the first player, the side money acquisition inspection module **447** determines whether side money can be acquired.

[**0086**] Namely, the side money acquisition inspection module **447** changes a betting activity in the case, the cards of the APE module **310** is determined to be less than second (a first condition), the table money of higher-ranked players is exhausted and may not bet anymore (a second condition), and a player having cards in a different direction (high or low) or a player having cards in the same direction but lower than the APE module **310** exists (a third condition). Namely, the side money acquisition module **447** changes a betting activity as a die determined by the basic betting activity determination module **441** into a raise in order to acquire side money.

[**0087**] The bluffing operation module **449** seeks a time point that the APE module **310** tries a bluff. Namely, the bluffing operation module **449** tries a bluff in the case an open card of the APE module **310** is a vision card and the APE module **310** leads a game by betting activities such as a bet and a raise (a first condition) or an expected genealogy of an opponent player that will try a bluff is determined to be lower than a genealogy expected when the vision card of the APE module **310** is completed (a second condition). For example, a betting activity of a die determined by the basic betting activity determination module **441** is changed into a bet or a raise at the time point determined by the bluffing operation module **449**. by trying a bluff, the APE module **310** may induce a betting activity of a die of the opponent player.

[**0088**] The direction determination service module **430** is used in only a high-low selection type game and performs a function of determining whether the APE module **310** that receives seven cards and stops betting selects which direction from high or low for competition. Namely, the direction determination service module **430** selects a direction bearing a very favorable comparison with the cards of opponent players among high, low, or swing in the high-low selection type game.

[**0089**] Particularly, in the case a difference of an expected genealogy probability analyzed by the card group analysis service module **420** has a value within an set range in high or low direction, the direction determination service module **430** determines that there is a competition power against opponent players in both high and low directions and selects a swing.

[**0090**] In this case, the swing indicates of tracing high and low of cards in high and low directions. Namely, the swing is selected in the case a group of cards that can win in high direction and a bat of cards that can win in low direction may be made by using seven cards. For example, since it is made as back straight in high direction and 6-top in low direction in case of cards of A, 2, 3, 4, 5, and 8, a possibility of wining at both directions is high, the swing may be selected. In case of the swing, a player takes stakes alone if the player wins both directions but all betting money will be lost if the player loses or ties with the opponent in any direction.

[**0091**] On the other hand, referring to FIG. **4**, the inducement operation module **443**, the load inspection module **445**, and the bluffing operation module **449** compute an expected inducement figure, an expected load figure, and an expected bluffing figure by using cards of the APE module **310**, open cards and card open tendency of opponent players. Also, according to the difficulty of a poker game, a standard value is set for each figure and a proper betting activity is determined according whether each computed figure is more than the standard value.

[**0092**] FIG. **5** is a diagram illustrating the progress of a poker game based on an online APE.

[**0093**] Referring to FIG. **5**, four players and two APEs perform a poker game while having their own money. The two APEs analyze their own cards and open cards of

opponent players, analyze game information such as the expected card genealogy and the number of betting turns of the opponent players, and determine a betting activity against human players. As described above, by using the poker game based oil the APE, a game may be progressed before the member of a game is filled.

[0094] Also, in a conventional online poker game, the sort of a certain game that a player wants is selected at an initial game screen, and the player enters a selected game channel and plays a selected game via a game room. On the other hand, a poker game room based on the APE provides a function of selecting the sort of a game that a player wants while entering a previously generated game room.

[0095] The APE module for instruction in poker and the APE module for replicating poker performing ability may be embodied by a poker game server equipped with the APE module.

[0096] The APE for instruction in poker, which instructs a game player in operating a poker game by using the APE, will be described.

[0097] FIG. **6** is a block diagram of a poker instruction APE module according to an embodiment of the present invention.

[0098] For instruction in poker game, the poker game service server based on the APE provides a poker game instruction room formed of at least APE module according to the degree of a player requesting playing a game for instructing a poker and performs the poker game by the APE module as an opponent player in the case the player enters the poker game instruction room.

[0099] In the case the game for instruction in poker is performed, though not shown to the player, the APE for instruction in poker enters the same location with the player and performs the poker game by using the same cards of the player. In the case the turn of the player comes around, the APE makes an additional window to show information for playing a card game, such as analysis on the cards belonging to the player and the cards of opponent players, the degree of the cards belonging to the player, and the selection of a strategic betting.

[0100] Referring to FIG. **6**, the poker instruction APE module **320** includes an open card service module **610**, a card group analysis service module **620**, a direction determination service module **630**, a betting activity service module **640**, and a game information display module **650**.

[0101] The open card service module **610** refers to an open card selection table set by the APE module **310**, determines an optimized open card for each game situation, and provides to the player of the poker game terminal together with the reason of recommendation.

[0102] An open card has to be determined in order to hide an expected genealogy of a player from opponent players. In case of a beginner that can not easily grasp a method of performing a poker, a method of selecting an open card is indicated via additional window and a card to be open is recommended in order to enable the game beginner to learn a game performing ability.

[0103] The card group analysis service module **620** analyzes the present open cards of opponent players, the number of unopened cards, and hidden cards of the player, extracts at least one expected genealogy, and computes expected genealogy probability for each expected genealogy probability. The expected genealogy and the probability of the same are provided to the player, thereby easily analyzing the cards of the opponent players and determining a betting activity according to the analysis.

[0104] Also, in case of a high-low type game, the card group analysis service module **620** extracts an expected genealogy for each high game and low game, computes an expected genealogy probability, determines an expected genealogy with a highest expected genealogy probability to be a present expected genealogy for each high game and low game, and provides the present expected genealogy to the player.

[0105] The betting activity service module **640** determines a betting activity of the player by using card information analyzed by the card group analysis service module **620** and the betting information of the opponent players. The betting activity service module **640** includes a basic betting activity service module **641**, an inducement operation service module **643**, a load inspection service module **645**, a side money acquisition inspection service module **647**, and a bluffing operation service module **649**. The function of each element is the same as described in the description on FIG. **4**. There is a difference that a betting activity is not automatically performed based on the analysis on the cards of the APE module **310** and a desirable betting activity is shown by analyzing the cards of the player.

[0106] The inducement operation service module **643**, the load inspection service module **645**, the side money acquisition inspection service module **647**, and the bluffing operation service module **649** compute an expected inducement figure, an expected load figure, and an expected bluffing figure by using the cards of each APE module **310**, open cards of the opponent players, the open tendency of the cards, respectively, and determine a desirable betting activity according to whether each figure is more than a previously set standard value.

[0107] The direction determination service module **630** is only used in a high-low selection type game and provides which one of high and low direction is selected for competition by a player that received seven cards and finished betting. Namely, in case of a high-low selection type game, the direction determination service module **630** determines a direction bearing a very favorable comparison with the cards of opponent players among high, low, or swing. Therefore, a player that is short on a high-low type game method and analyzing cards may fully understand a game.

[0108] The open card service module **610**, the card group analysis service module **620**, the direction determination service module **630**, and the betting activity service module **640** transmit game information such as each selected open card, an expected genealogy, a probability of the expected genealogy, the direction of a game, and betting activity to the game information display module **650**, respectively.

[0109] The game information display module **650** displays the received each game information to the player.

[0110] FIG. **7** is a flow chart illustrating a method of performing an instruction poker game of the APE for instruction in poker.

[0111] When the instruction poker game starts, cards are allocated to all players for each game (Step S700).

[0112] The APE for instruction determines whether the instruction poker game is a game in which an open card is selected (Step S710). In the case open card selection has to be performed, the APE for instruction makes occasional number of whether an open card is selected with respect to all possible occasions of the received cards according to the sort of each game and determines one of them. The occasional number is managed by an open card selection table. The APE for instruction refers to the APE database and uses information value set in the open card selection table. For example, in case of a seven-card stud game in which three cards are received and one of them has to be opened, all possible occasional numbers are set, such as cases three cards have the same number, three cards have the same pattern, two cards have the same number, two cards have the same pattern, two of three cards have the same number and two cards have the same pattern, and three cards have a sequential number, and records which card is selected in this case in the open card selection table. The APE for instruction selects an open card according to the received three cards by referring to the previously set open card selection table and provides the selection with respect to the open card to the poker game terminal unit (Step S720). The APE for instruction performs analysis on cards based on open card information of all players and information on hidden cards of the player of the poker game terminal unit. Now opened cards of opponent players, the number of unopened cards, and the hidden cards of the player of the poker game terminal unit are analyzed, at least one expected genealogy is extracted, and a probability of each expected genealogy is computed. The APE for instruction provides the extracted expected genealogy of the players and the probability information on the same to the poker game terminal unit (Step S730). The expected genealogy and the service of the probability information will be described in detail in the description of FIG. 9.

[0113] When the betting turn of the player comes around, the APE for instruction determines and provides a proper betting activity of the poker game terminal unit based on the card information analyzed in Step S 730 (Step S740). The betting activity is determined based on a betting table according to all possible betting situations. The betting table is described in detail in the description on FIG. 8.

[0114] After the APE for instruction provides the betting activity, the APE for instruction determines whether all betting activities are finished (Step S750). In the case all betting activities are performed and the game is finished, the APE determines whether a game that is being performed now is a high-low game (Step S760). If a game is a high-low game, in order to select the direction of its own at the last of the game, the APE for instruction determines one direction bearing a very favorable comparison with the cards of opponent players among high, low, or swing and provides the direction to the poker game terminal unit (Step S770).

[0115] FIG. 8 is a betting table for determining the betting activity of the APE for instruction in poker, according to an embodiment of the present invention.

[0116] In order to make out the betting table 800, a betting situation for determining the betting activity has to be set. Factors for setting the betting situation are as following.

[0117] First, the betting turn of its own is a factor. Since it is advantageous to betting later than others, the betting turn is an important factor for setting a betting situation. Accordingly, the APE has three situations of betting at first, in the middle, or at last.

[0118] Second, card analysis and betting situation of players before and after the APE are important. Due to the property of a poker game, the betting of opponent players includes a large amount of information. Since a player once performs a betting and the card of the player has to be accepted as a good one, the card analysis and the betting situation are important factors for setting the betting situation. Accordingly, the APE for instruction in poker has to distinguish whether first cards exist in the before and after the APE and betting exist in all players, according to situations.

[0119] Third, the grade of surface cards of the APE is a factor. The surface cards indicate a group formed of opened cards in a game in which open cards exist, such as a seven-card stud game or a seven-card stud high-low. Generally, since final cards are also good if the surface cards are good, the surface cards are an important factor for determining the betting situation. The grade of the surface cards is different for each poker game and the number of opened cards. For example, in the case six or more cards are received in a seven-card stud game, the surface cards which are boss as Jack pair or more, have the same pattern, or have a sequential number are a first grade of the surface cards, the surface cards which are boss having a two-pair not more than 10 or have three of the surface cards have the same pattern or a sequential number are a second grade of the surface cards, and other cases are a third grade of the surface cards.

[0120] Fourth, the number of a present betting turn is important. In a general poker game, the betting number for each player is limited. Generally, 2 or 3 betting chances are given for each player. The number of betting turns indicates what the number of betting activities performed by a player is. Since a betting method becomes different for each betting turn due to the property of a poker game, the number of betting turns is an important factor for determining a betting situation.

[0121] Finally, the progress of a poker game is important. Since a poker game is progressed by receiving cards, the betting situation is different according to the progress of a present game. For example, in the case seven cards are totally received in a seven-card stud game, the betting situation of a situation of receiving a sixth card, in which a possibility of improving the cards still exists, is different from a situation of receiving a final seventh card, in which cards are decided, the progress of the present poker game is an important factor for determining the betting situation.

[0122] The APE for instruction in poker has the betting table 800 formed by composing the five factors for determining the betting situation and a cell determining what a betting activity for each case and a strategic betting activity are considered. The betting table is provided according to the result of analyzing the cards of a player. The betting table of FIG. 8 is provided in the case the cards of the player is determined to be a competitive second. The meaning of the competitive second will be defined in the description on FIG. 9.

[0123] Referring to FIG. **8**, for example, in the case the player is a boss, there is no betting before the player, a betting is expected in a following player that has first ranked cards, the surface cards of the player is first grade, first betting situation of sixth, the betting table **800** of the APE for instruction in poker stores a check as a betting activity and a bluffing as a strategic betting.

[0124] As described above, since occasional number according to each betting situation for reach poker game is prepared and desirable betting activity and whether a strategic betting has to be performed are provided for each case, the APE for instruction in poker may determine a betting activity according to the situation by referring to the betting table **800**.

[0125] Also, the APE for instruction in poker recommends and presents the desirable betting activity according to each betting situation to the poker game terminal unit playing the game for instruction, by referring to the betting table **800**.

[0126] FIG. **9** is a diagram illustrating an example of analysis on cards provided by the APE for instruction in poker, to a player.

[0127] As illustrated in FIG. **9**, the APE for instruction in poker may provide analysis on cards of the APE and opponent players as an additional window. A decided group of cards, an expected group of cards, and a vision group of cards of a player himself (player 0) and the opponent players (player 1, player 2, player 3, and player 4) are displayed in the sort and the probability on a card group analysis window **900**. The decided group of cards indicates a group of cards formed of opened cards of all players and hidden cards of the player himself. Also, the expected group of cards indicates an expected genealogy that has a high probability of being formed from the groups of cards higher than the decided groups of cards. The vision group of cards indicates an expected genealogy that has a highest probability from groups of cards higher than the expected cards.

[0128] On the other hand, the card group analysis window **900** provides a computed group of card that includes the number of the kinds of all the groups of cards in addition to the decided group of cards, the expected group of cards, and the vision group of cards such that all possible groups of cards of himself and the opponent players can be expected together with the probability of forming them.

[0129] Also, a high group and a low group in which card analysis is performed with respect to cases of a high game and low game are provided such that the kind of a game having a high probability of wining can be expected.

[0130] FIG. **10** is a diagram illustrating analysis on betting situation and betting activity recommendation of the APE for instruction in poker according to the analysis on the group of cards, according to an embodiment.

[0131] The APE for instruction in poker determines the ranking of players based on the card group analysis window **900** of FIG. **9**. In detail, the APE for instruction in poker distinguishes whether a group of cards of a player is a first grade group of cards, which has the highest genealogy than other players or a second grade, according to the result of analyzing the group of cards. In this case, though the group of cards of the player is the first grade group of cards, it is determined that a decided group of cards of the player is a perfect first grade that wins against a vision group of cards of an opponent player, the decided group of cards of the player is a general first grade that wins an expected group of cards of the opponent player, or an expected group of cards of the player is a competitive first grade that wins against the expected group of cards of the opponent player.

[0132] Also, in case a group of cards is not more than second grade, it is determined that the group of cards of the player is a competitive second grade in which the expected group of cards of the player the player can not win against the expected group of cards of the opponent players but a vision group of cards of the player may win against the expected group of cards of the opponent players or a perfect second grade in which the vision group of cards of the player can not win against the expected group of cards of the opponent players.

[0133] After the grade of the players is determined, the described five factors for determining the betting situation such as the betting order of the player, the degree of a group of cards and betting of before and after the player, the surface cards of the player, the number of present betting turns, and the progress of a poker game are displayed on an additional betting recommendation window **1000** as shown in FIG. **5** and a desirable betting activity may be recommended based on the five factors.

[0134] In the APE, for example, a betting table of itself as shown in FIG. **3** and betting activity corresponding to relevant situation and whether a strategic betting activity is performed are recorded in the betting table, based on the described five factors. The betting activity of each betting situation is selected based on a proper reason. For example, in the case a group of cards is a perfect first grade in a high-low game, if a call is recorded in the betting table in a situation in which the betting order of the player is last, there is a betting in earlier turn, the surface cards of itself, and it is first betting turn of sixth, the APE designer thinks call is considerable in that case. Therefore, when the betting table of the APE is designed, the APE designer fills each cell and records the reason of the betting activity of each cell and shows the reason to the player for each situation, thereby instruction in playing a poker.

[0135] In the case described above, a raise is considered as desirable because the player has a perfect first grade group of cards. However, there is a betting before and the surface cards of the player are good, if the player performs a raise, other players perform a die to give up the game. Therefore, it is desirable to perform a call. The content is provided to the player such that the proper poker game playing method is known to the player in the described case.

[0136] As described above, the player may receive the decision of the APE and the reason of the decision via the betting recommendation window **1000** from the betting situation information, thereby learning the game playing method of the APE.

[0137] As illustrated in FIGS. **9** and **10**, the APE receives the same card of the player and shows information on analysis on a group of cards and situation of the APE to the player while the player performs a poker game, thereby instructing the player in the poker skill of the APE.

[0138] Next, a method of making a replicated APE of a human player by using an APE will be described in detail.

[0139] The basic concept of the replication is that the selection and betting activity performed by a player while playing a card game are analyzed to make peculiar cards analysis tendency of the player and an open card table and betting table are completed to make an own APE of the player.

[0140] When a replication starts, a most general replication APE enters the same location of a player and performs a poker game in the same environment. The replication APE is different from a general APE in a function of making a poker game playing engine according to the game tendency of the player by analyzing the betting activity of the player.

[0141] FIG. **11** is a diagram illustrating the configuration of a replication APE module according to a preferable embodiment of the present invention.

[0142] Referring to FIG. **11**, the replication APE module **330** includes a replication initialization module **1100**, a player tendency replication module **1120**, and a game playing proxy module **1130**.

[0143] The replication initialization module **1100** sets an initial value of information included in the replication APE database **380** storing all sorts of information used in generating the replication APE. Particularly, the APE database **370** is copied in the replication APE database **380** by the replication initialization module **110**.

[0144] The player tendency replication module **1120** monitors the game playing of the player and updates the content of the replication APE according to the game tendency of the player.

[0145] In the case a request of playing a game by the replication APE is received from a poker game terminal unit, the game playing proxy module **1130** refers to information value included in the replication Ape database **380** and plays a game action according to the information for each game situation while performing an online poker game by proxy. The replication APE database **380** has and provides probability information of each game action with respect to all game situation according to the game tendency of the player and plays the game based on the probability information, thereby playing the game identical with or similar to the player.

[0146] FIG. **12** is a block diagram of the player tendency replication module according to a preferable embodiment of the present invention.

[0147] Referring to FIG. **12**, the player tendency replication module **1120** includes an open card selection tendency module **1122**, a card group analysis tendency replication module **1124**, a swing tendency replication module **1126**, a betting tendency replication module **1128**, and a game habit replication module **1130**.

[0148] The open card selection tendency replication module **1122** manages an open card tendency replication table for replicating an open card selecting action of a player in a game that has to select an open card. The open card tendency replication table includes all classified game situations of an open card selection table of the general APE and the occasional number of selecting the open card. It is recorded in the open card tendency table which card the player selects for each case and the open card selecting action of the player.

[0149] As the player performs a lot of poker games, the open card tendency table is filled with the open card selection tendency of the player. The open card tendency table will be described in detail in the description on FIG. **13**.

[0150] The card group analysis tendency replication module **1124** replicates the card group analysis tendency with respect to the cards of the player and the cards of opponent players. The card group analysis of the general APE is very general due to being based on the probability. However, there are players who have a tendency of considering the cards of his own as high or players who have a tendency of considering the cards of his own as low. The result of card group analysis to which own card group analysis tendency of the player is applied by considering the card group analysis tendency of the player is required.

[0151] For this, each time, the replication APE compares the betting activity of the player and the betting activity of the replication APE and analyzes. In order to store the result of comparison, the card group analysis tendency table of the player is maintained. In the table, for example, the compassion and analysis result with respect to recent 100 betting activities of the player are stored.

[0152] As the result of comparing the betting activity of the player, if the player performs a betting activity higher or lower than the APE, it is recorded in the card group analysis tendency table. In this case, the high betting activity indicates a betting activity with a betting degree is high. A call is higher than a die, and a raise is higher than the call. The low betting activity indicates the opposite of the high betting activity.

[0153] When the card group analysis tendency of the player is completed as described above, the replication APE of the player analyzes a card group based on the card group analysis tendency table. In case of a player whose result value of analyzing the card group is high, an expected group of cards and vision group of cards are designated to be higher than a general APE by one grade.

[0154] The decided group of cards indicates a group of cards formed of opened cards of all players and hidden cards of the player himself. Also, the expected group of cards indicates an expected genealogy that has a high probability of being formed from the groups of cards higher than the decided groups of cards. The vision group of cards indicates an expected genealogy that has a highest probability from groups of cards higher than the expected cards.

[0155] On the other hand, the card group analysis window **900** provides a computed group of card that includes the number of the kinds of all the groups of cards in addition to the decided group of cards, the expected group of cards, and the vision group of cards such that all possible groups of cards of himself and the opponent players can be expected together with the probability of forming them.

[0156] Also, a high group and a low group in which card analysis is performed with respect to cases of a high game and low game are provided such that the kind of a game having a high probability of wining can be expected.

[0157] FIG. **10** is a diagram illustrating analysis on betting situation and betting activity recommendation of the APE for instruction in poker according to the analysis on the group of cards, according to an embodiment.

[0158] The APE for instruction in poker determines the ranking of players based on the card group analysis window **900** of FIG. **9**. In detail, the APE for instruction in poker distinguishes whether a group of cards of a player is a first grade group of cards, which has the highest genealogy than other players or a second grade, according to the result of analyzing the group of cards. In this case, though the group of cards of the player is the first grade group of cards, it is determined that a decided group of cards of the player is a perfect first grade that wins against a vision group of cards of an opponent player, the decided group of cards of the player is a general first grade that wins an expected group of cards of the opponent player, or an expected group of cards of the player is a competitive first grade that wins against the expected group of cards of the opponent player.

[0159] Also, in case a group of cards is not more than second grade, it is determined that the group of cards of the player is a competitive second grade in which the expected group of cards of the player the player can not win against the expected group of cards of the opponent players but a vision group of cards of the player may win against the expected group of cards of the opponent players or a perfect second grade in which the vision group of cards of the player can not win against the expected group of cards of the opponent players.

[0160] After the grade of the players is determined, the described five factors for determining the betting situation such as the betting order of the player, the degree of a group of cards and betting of before and after the player, the surface cards of the player, the number of present betting turns, and the progress of a poker game are displayed on an additional betting recommendation window **1000** as shown in FIG. **5** and a desirable betting activity may be recommended based on the five factors.

[0161] In the APE, for example, a betting table of itself as shown in FIG. **3** and betting activity corresponding to relevant situation and whether a strategic betting activity is performed are recorded in the betting table, based on the described five factors. The betting activity of each betting situation is selected based on a proper reason. For example, in the case a group of cards is a perfect first grade in a high-low game, if a call is recorded in the betting table in a situation in which the betting order of the player is last, there is a betting in earlier turn, the surface cards of itself, and it is first betting turn of sixth, the APE designer thinks call is considerable in that case. Therefore, when the betting table of the APE is designed, the APE designer fills each cell and records the reason of the betting activity of each cell and shows the reason to the player for each situation, thereby instruction in playing a poker.

[0162] In the case described above, a raise is considered as desirable because the player has a perfect first grade group of cards. However, there is a betting before and the surface cards of the player are good, if the player performs a raise, other players perform a die to give up the game. Therefore, it is desirable to perform a call. The content is provided to the player such that the proper poker game playing method is known to the player in the described case.

[0163] As described above, the player may receive the decision of the APE and the reason of the decision via the betting recommendation window **1000** from the betting situation information, thereby learning the game playing method of the APE.

[0164] As illustrated in FIGS. **9** and **10**, the APE receives the same card of the player and shows information on analysis on a group of cards and situation of the APE to the player while the player performs a poker game, thereby instructing the player in the poker skill of the APE.

[0165] Next, a method of making a replicated APE of a human player by using an APE will be described in detail.

[0166] The basic concept of the replication is that the selection and betting activity performed by a player while playing a card game are analyzed to make peculiar cards analysis tendency of the player and an open card table and betting table are completed to make an own APE of the player.

[0167] When a replication starts, a most general replication APE enters the same location of a player and performs a poker game in the same environment. The replication APE is different from a general APE in a function of making a poker game play engine according to the game tendency of the player by analyzing the betting activity of the player.

[0168] FIG. **11** is a diagram illustrating the configuration of a replication APE module according to a preferable embodiment of the present invention.

[0169] Referring to FIG. **11**, the replication APE module **330** includes a replication initialization module **100**, a player tendency replication module **1120**, and a game play proxy module **1130**.

[0170] The replication initialization module **1100** sets an initial value of information included in the replication APE database **380** storing all sorts of information used in generating the replication APE. Particularly, the APE database **370** is copied in the replication APE database **380** by the replication initialization module **110**.

[0171] The player tendency replication module **1120** monitors the game plays of the player and updates the content of the replication APE according to the game tendency of the player.

[0172] In the case a request of playing a game by the replication APE is received from a poker game terminal unit, the game play proxy module **1130** refers to information value included in the replication Ape database **380** and plays a game action according to the information for each game situation while performing an online poker game by proxy. The replication APE database **380** has and provides probability information of each game action with respect to all game situation according to the game tendency of the player and plays the game based on the probability information, thereby playing the game identical with or similar to the player.

[0173] FIG. **12** is a block diagram of the player tendency replication module according to a preferable embodiment of the present invention.

[0174] Referring to FIG. **12**, the player tendency replication module **1120** includes an open card selection tendency module **1122**, a card group analysis tendency replication module **1124**, a swing tendency replication module **1126**, a betting tendency replication module **1128**, and a game habit replication module **1130**.

[0175] The open card selection tendency replication module **1122** manages an open card tendency replication table

for replicating an open card selecting action of a player in a game that has to select an open card. The open card tendency replication table includes all classified game situations of an open card selection table of the general APE and the occasional number of selecting the open card. It is recorded in the open card tendency table which card the player selects for each case and the open card selecting action of the player.

[0176] As the player performs a lot of poker games, the open card tendency table is filled with the open card selection tendency of the player. The open card tendency table will be described in detail in the description on FIG. **13**.

[0177] The card group analysis tendency replication module **1124** replicates the card group analysis tendency with respect to the cards of the player and the cards of opponent players. The card group analysis of the general APE is very general due to being based on the probability. However, there are players who have a tendency of considering the cards of his own as high or players who have a tendency of considering the cards of his own as low. The result of card group analysis to which own card group analysis tendency of the player is applied by considering the card group analysis tendency of the player is required.

[0178] For this, each time, the replication APE compares the betting activity of the player and the betting activity of the replication APE and analyzes. In order to store the result of comparison, the card group analysis tendency table of the player is maintained. In the table, for example, the compassion and analysis result with respect to recent 100 betting activities of the player are stored.

[0179] As the result of comparing the betting activity of the player, if the player performs a betting activity higher or lower than the APE, it is recorded in the card group analysis tendency table. In this case, the high betting activity indicates a betting activity with a betting degree is high. A call is higher than a die, and a raise is higher than the call. The low betting activity indicates the opposite of the high betting activity.

[0180] When the card group analysis tendency of the player is completed as described above, the replication APE of the player analyzes a card group based on the card group analysis tendency table. In case of a player whose result value of analyzing the card group is high, an expected group of cards and vision group of cards are designated to be higher than a general APE by one grade. In case of a player analyzing cards as low, an expected group of cards and vision group of cards are designated to be lower by one grade.

[0181] For example, a player performs high betting activities 70 times, same betting activities 20 times, and low betting activities 10 times, a replication APE of the player uses an expected group of cards and vision group of cards higher than a general APE by one grade 70 times, an expected group of cards and vision group of cards as the same as the general APE 20 times, and an expected group of cards and vision group of cards lower than the general APE by one grade 10 times.

[0182] The betting tendency replication module **1128** replicates the betting activity of the player after replicating the card group analysis by using the described method. The process is similar to the described process of replicating open card selection. First, a replication APE has a betting table in which the number of all sorts of selection classified and makes a betting tendency table of the player in which it may be recorded that a certain betting activity is performed for each case. In the betting tendency table, the betting activity of the player is recorded for each case.

[0183] As the player performs a lot of poker games, the betting tendency table is filled according to own betting tendency.

[0184] For example, in the case a card group analysis result is extracted as a player is a competitive first grade in one direction, there is a betting before, a betting is expected because a first grade group of cards in opposite direction in high-low game, if the player performs a betting activity as a call, the betting activity is recorded as a betting activity as a call is performed in the case in the betting table of the player.

[0185] As described above, if a player continuously performs games, the betting table of the player is filled by the described method. In the described case, if a betting table in which a call is performed 80 times, a raise is performed 10 times, and a die is performed 10 times, a replicated APE of the player performs a poker game, a call is performed by 80%, a raise is performed by 10%, and a die is performed by 10%.

[0186] Also, a cell for determining the performance of a certain strategic betting exists in the betting table of the replication APE. The cell is generated identical with the replication APE while the betting table of the player is generated. However, it is determined by analyzing the betting of the player whether a strategic betting is actually performed.

[0187] For example, in high-low game, the replication APE is a competitive second grade, a player is a boss, there is no betting before, there is expected a betting because a first grade group of cards exists in following order, the surface cards of the player is a first grade, first betting situation of sixth, in the betting table of the replication APE, the strategic betting is set as a bluffing. After the bluffing operation module operates, a final betting activity is changed into a raise, if a player performs a betting activity as a raise, the player also uses the bluffing operation module in the case and does not use the bluffing operation module except this case. Accordingly, a bluffing operation module use frequency table of the player is maintained such that a strategic betting is used in a case and it is recorded. Also, for example, only current 100 times actions are stored, thereby maintaining the bluffing operation module use frequency table based on current betting activities.

[0188] In case of the example, the replicated APE of the player performs a poker game, if it is recorded in the bluffing operation module use frequency table that the strategic betting is used 72 times and is not used 28 times, the bluffing operation module is used by a probability of 72%.

[0189] It is replicated by using the same method whether other strategic betting activities are used, such as the inducement operation module, load inspection module, and side money acquisition inspection module.

[0190] The game habit replication module **1130** replicates an action unconsciously performed by the player while playing a poker game. For example, there are a mandatory

betting habit, ping betting use habit, double betting use habit, response time use habit in replicating game habit.

[0191] First, the mandatory betting habit is a peculiar habit shown in an online poker game. In order to make a game bigger at first betting of the player, it is mandatory that a raise is performed regardless of the cards of the player. For example, in the case seven cards are received in a seven-card stud game, when four cards are given to players, almost players perform a raise, which is considered as an unwritten rule.

[0192] In order to determine whether a player habitually follows the rule, the replication APE makes a mandatory betting habit table and records a betting activity that the player performs at first betting, current 100 times. In the case it is recorded in the mandatory betting habit table that the player performs a raise 90 times and another betting activity 10 times, when the replicated APE of the player performs a raise by 90% regardless of cards.

[0193] Next, the betting activity of ping is used in increasing a hand in which a player that is a boss performs a betting by the least unit to induce opponent players to perform a raise and the player performs a raise again. However, a lot of players habitually perform a betting of ping instead of this cause.

[0194] For example, a player that is a boss and has a group of cards not more than second grade, usually, the player has to perform a betting of check but he habitually performs a ping. As described above, when the group of cards of the player is not a first grade, a betting of ping performed by the player is considered as a habit.

[0195] The replication APE makes a ping betting habit table in order to replicate the habit of using ping of the player. For example, actions performed currently 100 times in the case the player is a boss and the group of cards of the player is not more than a second grade are recorded in the table. In the case it is recorded in the ping betting habit table that a ping betting is performed 70 times and another betting is performed 30 times, the replicated APE of the player performs a ping betting by 70%.

[0196] Next, the betting of double betting is used for raising the possibility that opponent players perform a call in the case it is secured that the player wins the game or seeking the betting tendency of the opponent players in the case the player can not occupy a position of advantage but the possibility of wining is high. However, there are many cases that a lot of players habitually perform a double betting instead of using a double betting for the purpose.

[0197] For example, in the case a player has a group of cards not more than a second grade and all players perform a ping, the player has to perform a call or die but habitually performs a double betting.

[0198] To replicate the habit of using a double betting of the player, the replication APE makes a double betting habit table and stores, for example, the betting activity of the player, performed in the case the player has a group of cards not more than second grade and all players perform a ping betting. In the case it is recorded in the double betting habit table that a double betting is performed 60 times and another betting activity is performed 40 times, the replicated APE of the player performs a double betting by 60%.

[0199] Finally, a response time use habit indicates a time that a player uses time before performing an action when selection or betting turn of the player comes around. The response time is different for each player.

[0200] For example, to select an open card, a player uses one second or another player uses three seconds. Each player has a peculiar used time.

[0201] To replicate the used time of the player, the replication APE makes and maintains a response time use habit table. In the table, for each poker game, time used in opening a card, time used for each betting, time used in changing a card, time used in determining a direction of the player are made, used time of the player is computed and recorded. Only the record of current 100 times is maintained, thereby quickly reflecting a new action. Also, a used time longer than a certain standard value is accepted to be an exception and not recorded. If it is recorded in the response time use habit table that an average of time used in selecting an open card is 1.7 seconds, the replicated APE of the player has to select an open card after 1.7 seconds.

[0202] As described above, the poker habits of the player are replicated, thereby playing a poker game similar to the player.

[0203] The swing tendency replication module **1126** has to replicate the swing tendency of the player in the case the player selects the direction of a game after all betting activity is finished and before dividing victory or defeat in a high-low type game.

[0204] In case of a high-low type game, the direction is generally determined according to the direction in which a grade is high as a result of analyzing a group of cards. In case of a swing competing in high and low directions, each player has a different tendency. A player performing a daring play tries a swing in the case a game is expected to be very close, and a player performing a stable play tries a swing only in the case it is definitely determined to win in both directions.

[0205] Accordingly, the swing tendency of the player has to be replicated in order to perform a game according to the swing tendency of the player (Step S**1470**). In order to replicate the swing tendency, a table of the swing tendency of a player is maintained. The table records what kind of situation in which the player performs a swing and stores current 100 times swing actions. In the table, the swing action of the player is recorded by making 9 cases in which three sorts of first grades, such as a perfect first grade, a general first grade, and a competitive first grade are combined with high and low.

[0206] For example, if a player performs a swing in the case high is a general first grade and low is a competitive first grade, it is recorded in the swing tendency table of the player that a swing is performed in the case high is a general first grade and low is a competitive first grade. If it is recorded that a swing is performed 7 times and not performed 3 times in that case, the replicated APE of the player performs a swing by 70%.

[0207] According to the described player tendency replication module, as a player plays a game more than a certain times, a replication APE playing a poker game similar to a poker game player by analyzing poker game play ability, habit, and betting tendency of the player may be generated.

[0208] FIG. **13** is a diagram illustrating an open card selection table for replicating the tendency of the player in selecting an open cards according to an embodiment of the present invention.

[0209] Referring to FIG. **13**, for example, an example of an open card selection table **700** for replication in the case a pair more than 9-pair exists in a high-low game is illustrated. In a first case, 9-pair or more exists in three opened cards, two cards have the same pattern, and the rest excepting the pair is under 7. In this case, there may be three selections in which a card that is not one of the pair is opened, a card having a different pattern is opened, and a card that is one of the pair is opened. The replication APE records an action selected by the player in the open card selection table **700** for replicating the player.

[0210] As the described actions are repeatedly performed, the open card selection table **700** for replication is filled. In the described case, it is 720 times that a card that is not one of the pair is opened, it is 250 times that a card has a different pattern is opened, or it is 30 times that a card that is one of the pair and has a different pattern is opened, in the case a pair (two cards have the same number) exists in received three cards and two cards have the same pattern. When the replicated APE of the player meets the same case, a probability of opening a card that is not one of the pair is 72%, a probability of opening a card has a different pattern is 25%, and a probability of opening a card that is one of the pair and has a different pattern is 3%. The replicated APE of the player selects an open card at the probability.

[0211] FIG. **14** is a flow chart illustrating a method of generating a replication APE according to an embodiment of the present invention.

[0212] The replication APE monitors the player playing a game in order to replicate the game tendency of the player playing the game (Step S**1400**).

[0213] First, it is determined whether a game has a process of selecting an open card (Step S**1410**). In case of a game in which a card to be opened has to be selected, the replication APE replicates an open card selecting action of the player (Step S**1420**).

[0214] For this, the replication APE has all of the numbers of being selected, classified in the open card selection table. The replication APE makes a replicated open card tendency table of the player in which it is recorded that a certain card is selected for each case. In the open card selection table, an open card selecting action of the player is recorded for each case.

[0215] As the player performs a lot of poker games, the open card selection table of the player will be filled according to the open card selection tendency of the player.

[0216] Next, the card group analysis tendency with respect to cards of the player and cards of opponent players is replicated (Step S**1430**). The card group analysis of the APE has a general tendency due to being based on probability. However, there are players having a tendency of considering the cards as high or players considering the cards as low. Considering the card group analysis tendency of the player, a card group analysis result in which a peculiar card group analysis of the player is applied has to appear.

[0217] For this, the replication APE compares the betting activity of the player and the betting activity of itself and analyzes every time. A card group analysis tendency table of the player is maintained in order to store compared and analyzed result. For example, in the table, compared and analyzed result value with respect to current 100 times betting activities of the player is stored.

[0218] As a result of comparing the betting activity of the player, if the player performs a betting activity higher than the replication APE, a betting activity as the same as the APE, or a betting activity lower than the replication APE, it is recorded in the card group analysis tendency table that the player performs a high betting activity, the same betting activity, or a low betting activity. In this case, a high betting activity indicates a betting activity with a high degree of betting. A call is higher than a die, and a raise is higher than a call. A low betting is the opposite.

[0219] As described above, when the card group analysis tendency table of the player is complete, the replication APE of the player analyzes a group of cards based on the card group analysis tendency table. In the table, in case of a player performing a high analysis on a group of cards, an expected group of cards and vision group of cards higher than a general APE by one grade are designated. In case of a player performing a low analysis on a group of cards, an expected group of cards and vision group of cards are designated by one grade.

[0220] For example, in the case a player performs high betting activity 70 times, the same betting activity 20 times, and low betting activity 10 times, the replicated APE of the player uses a high expected group of cards and vision group of cards 70 times, the same expected group of cards and vision group of cards 20 times, and a low expected group of cards and vision group of cards 10 times.

[0221] Next, a betting activity has to be replicated after replicating the card group analysis is finished (Step S**1440**). In the process is performed by recording the betting activity performed by the player for each game situation by operating the described betting tendency replication module.

[0222] It is replicated whether another strategic betting is used, such as the inducement operation module, load inspection module, and side money acquisition module.

[0223] Also, the poker game habit of the player has to be replicated (Step S**1450**). The replication of the poker game habit is performed by recording the game habit of the player by operating the described game habit replication module **1130**. The game habit indicates an action unconsciously performed by the player while playing a game, such as mandatory betting habit, ping betting use habit, double betting use habit, and response action use habit.

[0224] As described above, the poker habits of the player are replicated, thereby performing an action similar to the player in real poker game.

[0225] In the case it is determined that all betting activities are finished, (Step S**1460**), victory or defeat has to be divided. In a high-low type game, game direction of the player has to be selected before dividing victory and defeat.

[0226] Accordingly, it has to be determined whether a game is a high-low type (Step S**1470**). If a game is a high-low type, generally, a direction is determined according

to a high grade. In case of swing competing in high and low direction, each player has a tendency different from each other. A player performing a daring play tries a swing in the case a game is expected to be very close, and a player performing a stable play tries a swing only in the case it is definitely determined to win in both directions.

[0227] Accordingly, the swing tendency of the player has to be replicated in order to perform a game according to the swing tendency of the player (Step S1480). In order to replicate the swing tendency, a swing tendency table of the player is maintained. The table records a player performs a swing in what situation and stores current 100 times swing actions. In the table, the swing action of the player is recorded by making 9 cases in which three sorts of first grades, such as a perfect first grade, a general first grade, and a competitive first grade are combined with high and low.

[0228] For example, if a player performs a swing in the case high is a general first grade and low is a competitive first grade, it is recorded in the swing tendency table of the player that a swing is performed in the case high is a general first grade and low is a competitive first grade. If it is recorded that a swing is performed 7 times and not performed 3 times in that case, the replicated APE of the player performs a swing by 70%.

[0229] Hereinafter, an automatic game engine control apparatus constructing a database storing various collected play models as input tendency data and determining input tendency data of a game performed by an automatic game engine based on the constructed database will be described with reference to FIG. **15**.

[0230] FIG. **15** is a configuration diagram illustrating an automatic game engine control apparatus according to an embodiment of the present invention.

[0231] An automatic game engine control apparatus **1500** of the present invention includes a tendency data generation module **1510**, a DB construction module **1520**, a tendency data search module **1530**, and an engine drive module **1540**.

[0232] First, the automatic game engine control apparatus **1500** stores a plurality of input tendency data as solution with respect to a certain problem in a database **1525** and enables an optimized input tendency data to be determined with reference to the database **1525** by considering the ability grade or play style of a player jointly playing a game. Accordingly, an automatic game engine playing a game based on the determined input tendency data may show desirable response ability corresponding to a game situation, there by being considered as a worthy opponent to opponent players and continuously keeping the fun of a game of the player.

[0233] The tendency data generation module **1510** analyzes input tendency of the player with respect to the game situation while playing a game and generates input tendency data. Namely, tendency data generation module **1510** collects play models of games performed by unspecified players before for each game situation and generates input tendency data by using each of the collected play models.

[0234] For example, the tendency data generation module **1510** generates the input tendency data by using various play models of playing a game with respect to a certain card arrangement form and collects play models to be generated as the input tendency data from play models of previously playing a game, thereby generating the input tendency data that can induce the game play of the automatic game engine close to the play tendency of real players.

[0235] Also, as another method of generating the input tendency data, the tendency data generation module **1510** may enable the automatic game engine to perform a game at random with respect to one card arrangement form and generate the input tendency data by using each play model of playing a game (hereinafter, the method is referred to as a trial and error method.). Namely, the tendency data generation module **1510** applies various play models to the same card arrangement form (game situation), enables the automatic game engine to perform a game, and generates the input tendency data by using the play models of playing the game.

[0236] Server groups including an automatic game engine may enable the automatic game engine to play by using a random play model according to the trial and error method by receiving the control of the automatic game engine control apparatus **1500** according to the present invention. In this case, a large amount of computation is required, thereby generating excessive load on the server group. Accordingly, the tendency data generation module **1510** identifies a gamer's terminal waiting for playing from gamers' terminals receiving a game service associated with the automatic game engine and leaves a part or whole of play models performed at random by the automatic game engine to the identified gamer's terminal, thereby preventing excessive load on the server group.

[0237] Namely, the tendency data generation module **1510** identifies a gamer's terminal waiting for playing a game while one performs a card game, which may exist due to the property of a card game service, and enables the identified gamer's terminal to perform a game of play models at random for the automatic game engine in the standby state such that the result of performing games is acquired from a relevant gamer's terminal.

[0238] The DB construction module **1520** constructs the database **1525** storing input tendency data generated in the game situation. Namely, the DB construction module **1520** associates a plurality of input tendency data associated with play models of playing a game by the automatic game engine with respect to one game situation and stores the input tendency data in the database **1525**.

[0239] A pair of 'game situation-input tendency data' actually stored in the database **1525** by the DB construction module **1520** may be selected by considering correct answer information or incorrect answer information included in the input tendency data. Only the input tendency data by which the relevant game situation may be processed in the case the automatic game engine plays a game based on the input tendency data may be selectively stored in the database **1525**. Namely, the DB construction module **1520** may select the input tendency data including the correct answer information or the input tendency data including the incorrect answer information within a set error from the input tendency data including the incorrect answer information and records them in the database **1525**.

[0240] Particularly, the DB construction module **1520** performs a predetermined correction with respect to the

incorrect answer information within the set error in selecting the input tendency data including the incorrect answer information, thereby enabling the input tendency data including the incorrect answer information to be processed together with the input tendency data including the correct answer information via the input tendency correction to be stored in the database **1525**.

[**0241**] In the case a predetermined automatic game engine plays a game, the tendency data search module **1530** searches one input tendency data associated with the game situation from the database **1525**. For this, the tendency data search module **1530** checks the form of the situation of a game performed by the automatic game engine, thereby recognizing the real game situation to be performed by the automatic game engine. After, the tendency data search module **1530** determines one of the input tendency data associated with the situation of the game recognized with reference to the database **1525**. Namely, the tendency data search module **1530** decides a play model of playing a game by the automatic game engine with respect to the game situation and selects the input tendency data of the play model determined as an optimal response in playing a game from a plurality of the input tendency data corresponding to one game situation.

[**0242**] In this case, the tendency data search module **1530** may search one of the plurality of the input tendency data by considering the degree of ability and the play style of a player jointly playing the game server. For this, the database **1525** may keep difficulty information or style information corresponding to each recorded input tendency data.

[**0243**] For example, the tendency data search module **1530** may analyze the play model in generating the input tendency data, generate the difficulty information or style information associated with the play of the automatic game engine, and additionally store the generated difficulty information or style information associated with the input tendency data of the play model.

[**0244**] Namely, in the database **1525**, the difficulty information associated with the level (low, middle, and high level) or style information on style (genealogy pursuit type or kwang collection type) when the automatic game engine performs a card game based on the input tendency data are maintained corresponding to each input tendency data.

[**0245**] Accordingly, the tendency data search module **1530** may recognize the level of ability or play style of the player playing a game against the automatic game engine and identify difficulty information corresponding to the level of the ability of the player or style information corresponding to the play style from the database **1525**.

[**0246**] Also, the tendency data search module **1530** defines the input tendency data corresponding to the difficulty information or style information from the input tendency data searched in association with a certain game situation from the database **1525**, thereby determining the input tendency data enabling the automatic game engine to perform a game in order to be an optimal response to the game situation.

[**0247**] In the specification, with respect to determining the input tendency data, only it is described that the tendency data search module **1530** determines one input tendency data from the input tendency data defined by the described game situation and difficulty information (style information). In addition, in the case a game is performed by using certain input tendency data, one input tendency data may be determined by considering an acquired final point.

[**0248**] For this, point information as a result of playing a game with respect to a relevant play model is included in the input tendency data. The tendency data search module **1530** may select the input tendency data including point information more than predetermined figures from the input tendency data stored corresponding to the game situation in the database **1525** and determine one input tendency data at random from the selected input tendency data.

[**0249**] In this case, the point information may be generated by considering the final point acquired in the case a random player plays a game or the automatic game engine plays a game according to the play model. For example, an average point acquired by playing a game according to the relevant play model may be included as the point information.

[**0250**] For example, in generating the input tendency data, the tendency data search module **1530** may count the times of performing the play model by associated with the input tendency data by a player or random game play of the automatic game engine. Also, the total point may be computed by adding each of final points acquired by playing a card game via playing a game according to the play model. After, the tendency search module **1530** divides the computed total points by the number of counting, thereby computing the final point averagely acquired and corresponding to the input tendency data by using the total point as the point information.

[**0251**] The engine drive module **1540** enables the automatic game engine to perform a game based on the searched input tendency data. Namely, the engine drive module **1540** enables the automatic game engine to perform the optimal play model with respect to a certain game situation by using the input tendency data identified corresponding to the game and the difficulty information or style information from the database.

[**0252**] As another embodiment of the present invention, an AI tool service system enabling the gamer's terminal to independently (not continuously keeping online) perform the play model with respect to a certain game situation will be described.

[**0253**] The automatic game engine control apparatus **1500** according to the present invention may further include an AI tool making module **1550** and an AI tool service module **1560**.

[**0254**] Namely, in the case a request for an AI tool including the difficulty information style information is received from the player, the AI tool making module **1550** searches the input tendency data corresponding to the difficulty information or style information from the database **1525** and makes out the AI tool by using the searched input tendency data. Namely, the AI tool making module **1550** searches the input tendency data corresponding to the difficulty information or style information generated in association with the game play of the automatic game engine and makes out the AI tool by using the searched input tendency data. In this case, the AI tool may be a sort of a game control program enabling a mini automatic game engine that may be

installed in a gamer's terminal to play. The AI too making module **1550** may make out a specified AI tool by considering the property of the input tendency data, such as the difficulty information or style information, used in making the AI tool.

[**0255**] For example, in the case an AI tool for game service with respect to a player whose ability level is low is to be made out, the AI tool making module **1550** may search the input tendency data corresponding to a 'low level' of the difficulty information from the database **1525** and make out an AI tool for a low-level gamer, which is called as 'a low-ranking', by using the searched input tendency data.

[**0256**] The AI tool service tool **1560** provides the made AI tool to the player in response to the AI tool request. Namely, the AI tool service module **1560** provides the AI tool made associated with the difficulty information or style information to the gamer's terminal as an response to the AI tool request received from the gamer's terminal.

[**0257**] For example, in the case a request for an AI tool including the difficulty information 'low level' is received from a gamer, the AI tool service module **1560** may allow the made AI tool 'low-ranking' to be provided to the gamer's terminal requesting the AI tool.

[**0258**] After, a mini automatic game engine included in the gamer's terminal is controlled to be played by the AI tool installed in the gamer's terminal. The mini automatic game engine may determine one of the input tendency data determined to be optimally associated with a game situation that the player will perform from the input tendency data included in the installed AI tool. The mini automatic game engine plays based on the determined input tendency data such that the optimal play model with respect to a certain game situation can be performed by the mini automatic game engine.

[**0259**] Also, the AI tool service module **1560** charges a predetermined bill on the player in association with providing the AI tool to the gamer's terminal, thereby giving the manager of the present system a certain financial benefit. In charging the bill, a general bill model may be employed and the detailed description will be omitted in the specification.

[**0260**] Also, a gamer's terminal receiving and the AI tool of the present invention and installing inside may generate an upgrade request at a selected interval. The automatic game engine control apparatus **1500** receives the generated upgrade request and transmits a relevant updated part of the AI tool, corresponding to the request, thereby performing a continual upgrade with respect to the previously provided AI tool. For this, the AI tool making module **1550** may include a second database storing the previously made AI tool. In the second database, the AI tool made by the AI tool making module **1550** may be stored together with the name associated with the difficulty information or style information.

[**0261**] Namely, the automatic game engine control apparatus **1500** stores the AI tool made or provided to a gamer's terminal and enables the previously made AI tool to be continually updated by reflecting the input tendency data generated according to the change of the input tendency of the player. In the case a request for update is generated from the gamer's terminal, the updated part is provided to the gamer's terminal. Accordingly, the automatic game engine control apparatus **1500** guarantees the continual upgrade with respect to the AI tool previously provided to the gamer's terminal, thereby providing a game service of playing a game against a real human player by using the mini automatic game engine reflecting a game play trend of a certain period.

[**0262**] Also, in making an AI tool, the AI tool making module **1550** may identify at least one input tendency data from the database by considering the ability of playing a game of the mini automatic game engine and the difficulty information of the input tendency data and make the AI tool by using the identified input tendency data. Namely, the AI tool making module **1550** may classify and search the input tendency data by dividing the ability of the mini automatic game engine in playing a game into high-ranking, middle-ranking, and low-ranking and make an AI tool whose difficulty is specified for each searched input tendency data. For example, the AI tool making module **1550** may limitedly search only the input tendency data whose difficulty information is more than 'Lv 100' and make a 'high-ranking' AI tool for a high-skilled player by using the searched input tendency data. Also, the AI tool making module **1550** may limitedly search the input tendency data whose style information is 'teenaged girl' by considering age or gender and make an AI tool 'sordid style' for a defensive style player by using the searched input tendency data.

[**0263**] According to the present invention, the play pattern of a certain group such as progamers, entertainers, or teenaged girls is extracted to be packaged to make an AI tool and is downloaded to the gamer's terminal, thereby providing a game service of playing a game against the certain group.

[**0264**] For example, a player may allow AI too associated with a high-ranking baduk player Changho, Lee to be downloaded and may receive a game service performed by the mini automatic game engine playing a game in a pattern similar to a real Changho, Lee.

[**0265**] Accordingly, according to making an AI tool and driving the AI tool in a gamer's terminal according to the present invention, though the gamer's terminal does not keep a continuous connection with the online game server, the gamer's terminal may receive a game service in the same environment. In addition, according to the present invention, an optimal play model with respect to a certain game situation is performed by the mini automatic game engine, thereby providing a high-level game service as playing a game against a real human player.

[**0266**] While this invention has been particularly shown and described with reference to preferred embodiments thereof, various changes in form and details may be made therein without departing from the spirit and scope of the invention as defined by the appended claims. The preferred embodiments should be considered in descriptive sense only and not for purposes of limitation. Therefore, the scope of the invention is defined not by the detailed description of the invention but by the appended claims, and all differences within the scope will be construed as being included in the present invention.

INDUSTRIAL APPLICABILITY

[**0267**] As described above, according to the engine for instructing a player in a game, a desirable input action

according to each game situation is provided for a beginner that is not familiar to a certain game, thereby helping the beginner playing a game and stirring up the fun of the beginner.

[0268] Also, according to the a replication engine replicating the game tendency of a player, according to the present invention, the game is performed by proxy via the replication engine in the case a perform can not be performed due to another work such as study, job, physiologic reason, and other things and a game may be performed by a team play together with the replication engine.

[0269] The present invention also provides a system and method of controlling an automatic game engine, in which the play pattern of the automatic game engine is determined by considering the level or play style of a player and a game service of high grade, similar to playing a game against a real human player while the game is performed with the automatic game engine as an opponent is provided.

[0270] The present invention also provides a system and method of controlling an automatic game engine, in which an AI tool specified according to a request of a player is installed in a gamer' terminal and a game service is independently provided in the gamer terminal by the control of the installed AI tool, thereby providing the game service if the gamer's terminal is not continuously connected to an online game server.

[0271] The present invention also provides a system and method of controlling an automatic game engine, in which the play pattern of a certain group such as progamers, entertainers, and teenaged girls is extracted and packaged to be framed as an AI tool and the AI tool is downloaded to a gamer's terminal such that a game service performed by a mini automatic game engine replicating a superior player designated by a player is provided.

1-63. (canceled)

64. A method of replicating a game player's play of the game, comprising the steps of:

allowing a game player to install an automatic game engine in a game terminal;

receiving command data for a game from the game player while the game player is playing the game, the command data being associated with various game situations;

analyzing input tendency of the game player in playing the game for each game situation by utilizing said automatic game engine; and

configuring said automatic game engine based, at least in part, upon said analyzed input tendency data.

65. The method of claim 64, wherein the step of analyzing input tendency data of the game player comprises the step of generating probability information with respect to the input for each of the analyzed game situations, and further comprising the step of providing a game level for the game player based, at least in part, upon the probability information.

66. The method of claim 65, wherein, in the step of configuring according to the input tendency data, the probability information initialized in the automatic game engine is adjusted and updated by using the acquired input tendency probability.

67. The method of claim 64, wherein in the step of analyzing input tendency data of the game player, a game play of a player at a game terminal is monitored at a predetermined time interval to acquire the input tendency data.

68. The method of claim 64, wherein, in the step of analyzing the input tendency, input tendency probability information of the player is acquired based on the input performed by the player under each game situation by monitoring the game play of the player more than a specified number.

69. The method of claim 64, wherein the step of receiving command data associated with various game situations from the game player comprises the step of receiving at least one command for replicating the game player via a user interface.

70. The method of claim 64, wherein the automatic engine includes a database which includes data for a plurality of game players.

71. The method of claim 64, wherein the game is a card game.

72. The method of claim 71, further comprising the steps of:

monitoring the card game played by the player in response to the player's request; and

replicating betting tendency of the player by using the automatic game engine for replication, based upon the monitored data.

73. The method of claim 71, wherein the automatic game engine for replication has initialized probability information on input for each game situation for basic game play, monitors card game play of the player, and adjusts and updates the initialized probability information according to input tendency probability information of the player based on the input tendency of the player in each game situation.

74. The method of claim 73, wherein the step of replicating the card analysis tendency comprises the steps of:

comparing all sorts of betting conditions considering a betting order of the player, analysis of the cards of before and after competitors and betting state, the value of the cards of the player, the number of betting turns, and the progress of the card game and probability information of an opening bet of the automatic game engine for replication, with a certain bet performed by the player; and

adjusting upward or downward the card analysis tendency probability information of the automatic game engine, based on the frequency that the frequency of a certain betting of the player is higher than, lower than, and the same as the initialized bet of the automatic game engine for replication.

75. The method of claim 74, wherein the frequency is computed by monitoring the card game playing of the player for recent n times.

76. The method of claim 73, wherein in the step of replicating the card betting tendency, probability information of the bet of the automatic game engine for replication is adjusted based on the frequency of the certain bet performed under a certain betting situations by the player by using betting situations and the probability information of the initialized bet of the automatic game engine for replication according to the all sorts of the betting situation,

considering the betting order of the player, the analysis on the cards of before and after competitors, the betting situation, and the progression of the card game.

77. The method of claim 76, wherein the frequency is computed by monitoring the card game playing of the player for recent n times.

78. The method of claim 76, in the case the card game played by the player is one of seven-card stud and seven-card stud high-low split that needs to select open cards, further comprising the step of replicating open card selection tendency in which the situation of all received cards, determined according to the kind of each game and the probability information of the initialized open card selecting motion of the automatic game engine according to the condition of the received card are updated by the probability based on the probability information of the open card selecting motion of the automatic game engine for replication based on the frequency of open card selecting motion performed in the case of each of the card received by the player.

79. The method of claim 76, further comprising the step of replicating a card game habit of the player in playing the game, the step of replicating the card game habit comprising the steps of:

replicating a mandatory betting use habit in which probability information on a first betting habit of the player is updated based on the frequency that the player performs a raise betting in a first betting;

replicating a ping betting use habit in which probability information on the ping betting tendency of the player is updated based on the frequency that the player performs ping betting activity in the situation of not more than a second group of cards and a boss;

replicating a double betting use habit in which probability information on the double betting tendency of the player is updated based on the frequency that the player performs double betting activity in the situation of not more than a second grade group of cards and the ping betting existing in previous order; and

replicating response time use habit in which probability information on the response time use habit of the player is updated based on the average of response times used while the player

plays a game for each sort of games, wherein the response time average is computed by using at least one of time used in opening a card, time used for each betting, time used in changing a card, and time used in determining a direction.

80. The method of claim 76, wherein, in the case a card game played by the player is a high-low selection type game, the frequency that the player determines a swing in each situation in which perfect first grade group of cards, a general first grade group of cards, and competitive first group of cards are combined with high, low, and high-low is computed and the probability information on the swing tendency of the player is set in the replication automatic game engine.

81. A method of controlling an automatic game engine, comprising the steps of:

generating input tendency data by analyzing input tendency of a player with respect to various game situations while playing a game;

storing the generated input tendency data in association with the game situation in a database;

searching the stored input tendency data associated with a certain game situation in said database in the case an automatic game engine plays a game with respect to the certain game situation; and

enabling the automatic game engine to perform the game based, at least in part, upon the searched input tendency data.

82. The method of claim 81, further comprising the steps of:

generating the difficulty information or style information associated with the game play of the automatic game engine with respect to the input tendency data; and

storing the generated difficulty information or style information in association with the input tendency data of the database, wherein, in the step of searching the one piece of the input tendency data, ability level or style of a player opposing the automatic game engine is checked, the difficulty information or style information corresponding to the checked ability level or player style of the player is identified from the database, and one piece of the input tendency data from the input tendency data corresponding to the identified difficulty information or the style information is randomly determined.

83. The method of claim 81, wherein the step of generating the input tendency data comprises the steps of:

enabling the automatic game engine to play a game as a plurality of random player models, with respect to the game situation;

checking the result of each of the played game models; and

generating input tendency data by using the game model checked as a result satisfying a selected standard.

84. The method of claim 83, wherein the result is determined to be either the correct answer or incorrect answer, and the automatic game engine uses the game model that is limited to either the correct answer or the incorrect answer with a predetermined error in the case the input tendency data is generated.

85. The method of claim 81, further comprising the steps of:

determining difficulty information or style information with respect to the stored input tendency data and storing the difficulty information or style information in association with the determined input tendency data for each game situation in a predetermined database;

building an AI tool by using the searched input tendency data in the case a request for the AI tool including one of the difficulty information and the style information is received from a terminal of the player; and

installing the AI tool in the terminal in response to the AI tool request,

wherein the step of searching the stored input tendency data associated with a certain game situation comprises the step of searching the input tendency data corresponding to the difficulty information or the style information from the database.

86. The method of claim 85, wherein the AI tool is installed in the terminal and controls a mini automatic game engine included in the terminal to play the game, and the mini automatic game engine determines one input tendency data associated with the game situation played by the mini automatic game engine from the input tendency data included in the AI tool and plays the game based on the determined input tendency data.

87. The method of claim 86, wherein, in the step of building the AI tool, at least one input tendency data is identified by considering the game playing ability of the mini automatic game engine and the difficulty information of the input tendency data, and the AI tool is built by using the identified input tendency data, in which the game playing ability of the mini automatic game engine is divided into a high-skilled player, a middle-skilled player, and a low-skilled player.

88. The method of claim 86, wherein, in the step of building the AI tool, at least one input tendency data is identified by considering the game playing ability of the mini automatic game engine and the difficulty information of the input tendency data, and the AI tool is built by using the identified input tendency data, in which the game playing style of the mini automatic game engine is divided into one of an attack type and a defense type according to any one of occupations, ages, and gender.

89. The method of claim 85, further comprising the steps of:

receiving an upgrade request generated at a selected interval from the terminal receiving the AI tool; and

searching the AI tool from the database and providing the searched AI tool in response to the upgrade request to the terminal.

90. The method of claim 85, further comprising the step of charging the player in case of providing the AI tool to the player.

91. The method of claim 81, further comprising the steps of:

determining difficulty information or style information with respect to the generated input tendency data and storing the difficulty information or style information in association with the determined input tendency data for each game situation in a predetermined database;

classifying the input tendency data based on the difficulty information or the style information in the database;

building an AI tool by using the classified input tendency data;

storing each of the AI tool in association with the difficulty information or the style information in a second database;

searching the AI tool associated with the difficulty information or the style information from the second database; and

providing the searched AI tool to a terminal of the player in the case a request for the AI tool including the difficulty information or the style information from the terminal of the player.

92. The method of claim 91, wherein the AI tool is installed in the terminal and controls a mini automatic game engine included in the terminal to play the game, and the mini automatic game engine determines one input tendency data associated with the game situation played by the mini automatic game engine from the input tendency data included in the AI tool and plays the game based on the determined input tendency data.

93. The method of claim 92, wherein, in the step of building the AI tool, at least one input tendency data is identified by considering the game playing ability of the mini automatic game engine and the difficulty information of the input tendency data, and the AI tool is built by using the identified input tendency data, in which the game playing ability of the mini automatic game engine is divided into a high-skilled player, a middle-skilled player, and a low-skilled player.

94. The method of claim 92, wherein, in the step of building the AI tool, at least one input tendency data is identified by considering the game playing ability of the mini automatic game engine and the difficulty information of the input tendency data, and the AI tool is built by using the identified input tendency data, in which the game playing style of the mini automatic game engine is divided into one of an attack type and a defense type according to any one of occupations, ages, and gender.

95. The method of claim 91, further comprising the steps of:

receiving an upgrade request generated at a selected interval from the terminal receiving the AI tool; and

searching the AI tool from the database and providing the searched AI tool in response to the upgrade request to the terminal.

96. The method of claim 91, further comprising the step of charging the player in case of providing the AI tool to the player.

97. A method of instructing a game player, comprising the steps of:

allowing a game player to install an automatic game engine for instruction in game terminal; and

providing an optimized input of a player in the instruction mode via an interface by utilizing the automatic game engine for instruction.

98. The method of claim 97, wherein the automatic game engine for instruction analyzes each game situation, has the optimized input information for each game situation for basic game playing, and provides the optimized input information to the player according to the analyzed game situation.

99. The method of claim 98, wherein the optimized input information includes input information with respect to each game having at least two difficulties, which are different from each other.

100. The method of claim 99, wherein, in providing the optimized input information, each of the analyzed game situations and a cause of the optimized input information according to the game situation are provided to the player.

101. The method of claim 97, further comprising the step of acquiring an optimized input for each game situation of the game player while playing a game via the game terminal.

102. A method of instructing a player in a card game, comprising the steps of:

generating an automatic game engine for instruction in card game in the case a request of playing a game for instruction in card game is received from a player of a card game terminal unit;

analyzing a group of cards of the player and opponent players by using the card instruction automatic game engine while the card instruction game is played and providing an expected genealogy and an expected genealogy probability of the player and the opponent players to the card game terminal unit; and

providing a desirable betting activity of the player to the card game terminal unit by using the card instruction automatic game engine according to the card analysis result.

103. The method of claim 102, wherein the opponent player is formed of at least one automatic game engine in which the automatic game engine analyzes each card game situation, has input information for each analyzed card game situation, and automatically plays a game based on the input information.

104. The method of claim 103, wherein the card instruction automatic game engine has input information optimized for each game situation in order to play a basic game, analyzes each card game situation, and provides the input information to the card game terminal unit according to the analyzed card game situation.

105. The method of claim 104, wherein the expected genealogy and the expected genealogy probability are provided being computed in the direction of high in the case the game for instruction in card game is high type game, in the direction of low in the case the game for instruction in card game is low type game, and in both directions of high and low in the case the game for instruction in card game is a high-low selection type game.

106. The method of claim 104, in the case the game for instruction in card game is one of a seven-card stud game and a seven-card stud high-low game in which it is required to select a card to be opened, further comprising the step of providing a group of cards to be opened by the card game terminal unit to the card game terminal unit based on the input information optimized for each game situation of the received card.

107. The method of claim 104, in the case the game for instruction in card game is a high-low selection type game, further comprising the step of providing a direction including a highest expected genealogy probability from expected genealogy probabilities computed in the high direction and the low direction as an expected game direction when the game for instruction in card game is finished, and in the case two expected genealogy probabilities having highest probability in the high direction and the low direction have a value within previously set range, providing a swing to the card game terminal unit as the expected game direction.

108. A method of playing a card game via a replicated player, comprising the steps of:

sounding out the intention of joining a card game played via a game terminal equipped with an automatic game engine in which the card game tendency of a player is replicated;

selecting that the player himself plays a card game or the automatic game engine plays a game by proxy in the case it is allowed to join the game; and

playing the card game by the selected player.

109. The method of claim 108, wherein the automatic game engine computes input for each game situation and probability information of the input by monitoring card game play of the player more than a predetermined times and performs the input based on the probability information in the same game situation in the case the card game is played by proxy.

110. A game apparatus using a replicated player, comprising:

a game access module for inquiring of a player whether the player will participate in a game via a game terminal equipped with an automatic game engine replicating the input tendency of the player;

a player selection module for selecting at least one of the player and the automatic game engine as a player to play the game in the case participating in the game is willingly allowed; and

a game playing module for playing the game by the selected player.

111. A game apparatus having a function of instructing a game player, comprising:

a game program storage module for storing at least one game program;

a player interface module receiving a game selection command, a game play command, and an instruction mode playing command provided by a game player and displaying a game program corresponding to the received game selection command from the storage module;

a game play module interactively playing the game program selected by the received game play command via the player interface module; and

a game information supply module providing optimized input of the player for each game situation, the optimized input of the player playing the selected game via the game play module by the received instruction mode playing command received from the player interface module for each game situation.

112. A system for instructing a game player, comprising:

a terminal of a player for request of playing a game for instruction;

an automatic game engine having input information optimized for each game situation for basic game play, analyzing each card game situation in the case the request of playing the game for instruction is received, and providing the input information optimized for the analyzed each card game situation to the terminal;

a game engine for controlling the operation of the automatic game engine for instruction and providing needed modules and game situations required in playing the game for instruction; and

database unit for storing information on a plurality of players and game information and providing the information to the automatic game engine for replication.

113. A system of replicating a card player, comprising:

a terminal of a player for a request of replicating a player or playing a game by proxy;

a replication automatic game engine replicating the card group analysis tendency or betting tendency of the player by monitoring the player playing a card game in the case the request of replication the player is received

and playing the game for the player in the case the request of playing a game by proxy is received;

a game engine controlling the generation and game playing by proxy of the replication automatic game engine and providing all sorts of required modules and game environments; and a database unit storing information on a plurality of players and card game and providing the information to the replication automatic game engine.

114. The system of claim 113, wherein the replication automatic game engine comprises:

a replication initialization module setting an initial value of a replication database storing all sorts of information used by the replication automatic game engine;

a player tendency replication module replicating the game tendency of the player and storing the game tendency input data in the replication database; and

a game play proxy module searching the game tendency input data from the replication database and playing a card game by proxy based on the game tendency input data.

115. The system of claim 113, wherein the game engine comprises a team play module supporting a team play function such that players form a team and play the card game.

116. The system of claim 113, wherein the team play comprises a part or the whole of:

a team play of a player team including at least two players and a mixed player-replication automatic game engine team including at least one player and at least one replication automatic game engine module;

a team play of the player team and a replication automatic game engine team including at least two replication automatic game engine modules;

a team play of the player team and a mixed player-player replication automatic game engine team including at least one player and at least one replication automatic game engine in which the game tendency of the player is replicated; and

a team play of the mixed player-player replication automatic game engine team and the mixed player-player replication automatic game engine team.

117. A system for instructing a card player, comprising:

a card game terminal unit of a player, for performing a request of playing a game for instructing a card game;

an automatic game engine for instruction having input information optimized for each game situation for basic game play, analyzing each card game situation in the case the request of playing the game for instructing a card game is received, and providing the input information optimized for the analyzed each card game situation to the card game terminal unit;

a game engine for controlling the operation of the instruction automatic game engine and providing all sorts of modules and game environments required in playing the game for instruction in card game; and

a database unit storing information on a plurality of players and card games and providing the information to the instruction automatic game engine.

118. The system of claim 117, wherein the game engine provides a function of generating a card game instruction room formed of an automatic game engine module analyzing at least one game situation, having probability information with respect to input for each analyzed game situation, and automatically playing a game and an instruction automatic game engine module for playing a game for instructing the player in a card game.

119. The system of claim 118, wherein the automatic game engine module comprises:

a card group analysis service module analyzing a group of cards of the player and opponent players while playing the game for instruction in card game and providing an expected genealogy and the probability of the expected genealogy of the player and the opponent players to the card game terminal unit;

a betting activity service module providing a betting activity optimized for each game situation by using analysis information of the group of open cards or betting order; and

a game information display module displaying information required in playing a card game, including the expected genealogy, the probability of the expected genealogy, and the betting activity.

120. The system of claim 119, wherein the instruction automatic game engine module, in the case the game for instruction in card game is a seven-card stud game or a seven-card stud high-low game, further comprises an open card service module providing a group of cards to be opened by the card game terminal unit to the card game terminal unit based on the input information optimized for each game situation of received cards.

121. The system in wired/wireless Internet environment of claim 119, wherein the instruction automatic game engine module, in the case the game for instruction in card game based on the automatic game engine is a high-low selection type game, further comprises a direction service module providing a direction including a highest expected genealogy probability from expected genealogy probabilities computed in the high direction and the low direction as an expected game direction when the game for instruction in card game is finished, and in the case two expected genealogy probabilities having highest probability in the high direction and the low direction have a value within previously set range, providing a swing to the card game terminal unit as the expected game direction.

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