(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
15 January 2009 (15.01.2009)

PCT

(10) International Publication Number
WO 2009/006735 A1

(51) International Patent Classification:
G06F 3/00 (2006.01) *G06F 15/18* (2006.01)
B25J 9/00 (2006.01) *G06F 3/03* (2006.01)
B25J 9/18 (2006.01) *G09B 21/00* (2006.01)
G05B 15/02 (2006.01) *H04N 7/18* (2006.01)

(21) International Application Number:
PCT/CA2008/001256

(22) International Filing Date: 8 July 2008 (08.07.2008)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
2,591,808 11 July 2007 (11.07.2007) CA

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(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report*

(54) **Title:** GESTURE RECOGNITION SYSTEM INCLUDING KEYBOARD AND MOUSE EMULATION

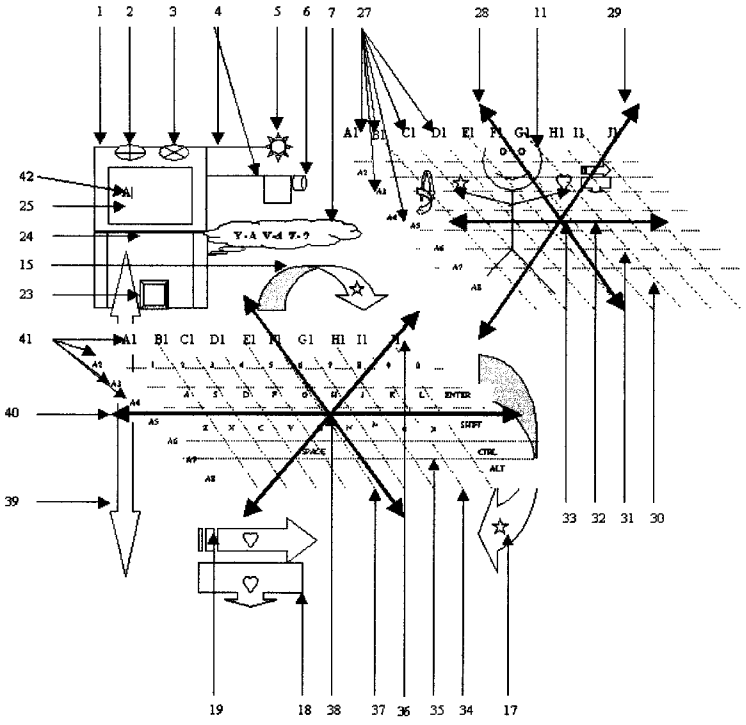

Fig. 3

(57) **Abstract:** Universal Video Computer Vision Input Virtual Space Mouse-Keyboard Control Panel Robot has computer system use video vision camera sensors, logical vision sensor programming as trainable computer vision seeing objects movements X, Y, Z dimensions' definitions to recognize users commands by their Hands gestures and/or enhance symbols, colors objects combination actions to virtually input data, and commands to operate computer, and machines. The robot has automatically calibrated working space into Space Mouse Zone, Space Keyboard zone, and Hand-Sign Languages Zone between user and itself. The robot automatically translate the receiving coordination users' hand gesture actions combinations on the customizable puzzle-cell positions of working space and mapping to its software mapping lists for each of the puzzle-cell position definition and calibrate these user hand and/or body gestures' virtual space actions into entering data and commands to computer meaningful computer, machine, home appliances operations.

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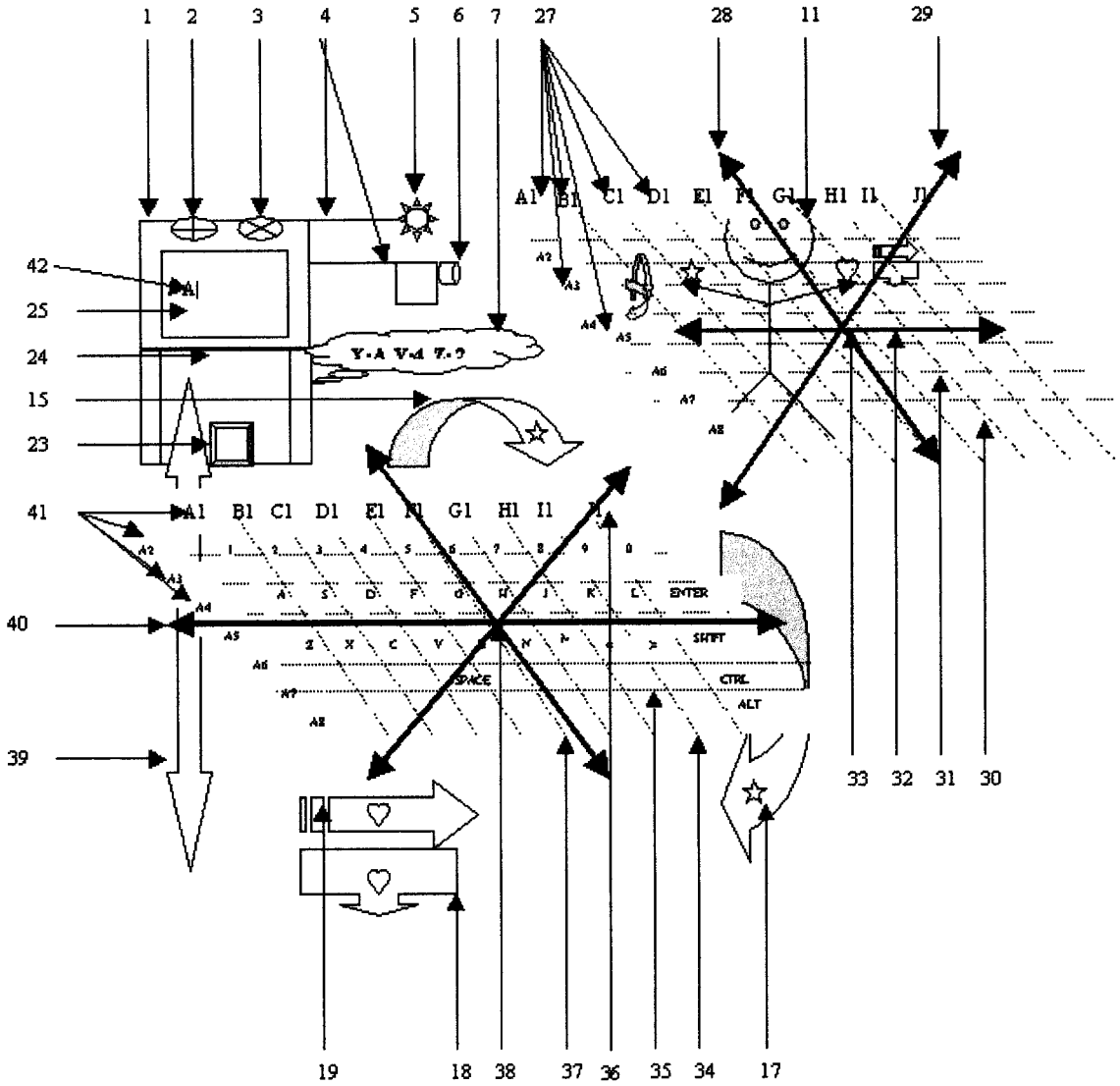
GESTURE RECOGNITION SYSTEM INCLUDING KEYBOARD AND MOUSE EMULATION



Field of The Invention

The present invention, Universal Video Computer Vision Input Virtual Space Mouse-Keyboard Control Panel Robot is related to robot equipped computer, video vision camera sensors, web cameras, plurality type of sensors, logical software vision program, as trainable computer vision tracking object movements using computer vision transfer user hands, body gesture into computer data and commands input according hands' movement X, Y, X dimensions positions that has calibrate working space into Space Mouse Zone, Space Keyboard zone, and Hand-Sign Languages Zone between user and itself computer, machines. The calibrate puzzle-cell position has define meaning that mapping on its software program for robot to transfer the virtual hands gesture actions into entering data and commands to operating computer, machines and the robot act as Universal virtual Space Mouse, virtual Space Keyboard, and virtual Remote Controllers.

Background of the Invention

Today Cell phone is design to be as tiny as possible. The keyboard is too small for typing and there is no space to build on it. Those keys are almost too tiny to punch it individual correctly without using a sharp pen point.

In addition, as computer technologies improve everyday, the current computer is design for normal people for most purpose, but lack of real solution for people who have disability of normal physical actions, movements, and physical eyesight, hearing, and speaking limitation. They are unable to operating computer easily as normal people do. These areas should be addressed and provide the effective solution for people needs.

Another concern of new modern technology, today average household owns at least 5 remote controllers for their electronic devices, TV, Stereo, Text Translator, Air Conditions, and Cable machines. Too many remote controllers can give hard times for some people, and for a simple action such as to turn on TV, you need to operate several controllers to do it, regardless that the time you spent to learn for those remote controllers and relearn them again and again.

No particular solution to improve these address issues needs together. The proposal solution of this invention is Universal Video Computer Vision Input Virtual Space

Mouse-Keyboard Control Panel Robot that has equipped computer system, video vision camera sensor, web cameras, logical vision software program and plural type of sensors. The robot using video computer vision automatically virtual projecting, (Space Mouse Zone, Space Keyboard zone, Hand-Sing Languages zone), working space between user and machine itself for user to enter text and commands by hand gestures. The robot computer vision consistently watching and to recognized user hands gesture movements coordinating with its define puzzle-cell positions of the virtual projecting working space zones that robot will automatically translate the receiving coordination users' hand gesture actions on the puzzle-cell positions' combinations and mapping to its software mapping lists for each the puzzle-cell position definition and calibrate these user hand and/or body gestures' space actions into computer meaningful operations such as Virtual Space Mouse input that moving cursor UP, Down, Left, Right, Left Clicks, Right Clicks, and also as Virtual Keyboard enter text, character input as to typing characters and function keys such as a, A, b, B, c, C, Backspace, Ctrl, Shift, Del, Enter key. ...Etc.

Robot also able to provide Hand-Sign Languages reading from user's hands and/ or body gesture according to its preprogram listing of hand-sign languages gesture patterns and grammars, robot can recognize what words and/or commands that user wants to enter. The robot can be enable symbolic characters writing such as Chinese characters, and drawing a picture into computer by user's hand gestures' movements.

The robot can be trained and taught to tracking on a specific object by recognize its shape, symbols and / or colors and optional embedded wireless sensors attached on the tracking objects that to enhance the object tracking reliable vision reading and also to fit user's usage preferences, especially for those who have physical limitation special needs to operate the computer or machine.

The puzzle-cell positions of Space Mouse, and Space Keyboard of the robot can be customized. The puzzle-cell position of space zone to allow user to reprogram the standard working zone positions of Space Mouse, and Space Keyboard to be customized the certain keys rearrangements, and setting up for the certain puzzle-cell position of working space zone for certain meaning of text and commands to represented. This customizable Virtual Space Mouse, Keyboard function to help user save time, easier and effective quickly enter texts and commands that frequent used to operating computers and machines.

Image a Universal remote controller can control all of appliances at home together. User can just move their hand gestures and operate TV that built this robot in it to move channel UP, Down, Volume Up and Volume Down, Power ON, Power OFF. Furthermore, the Universal Video Computer Vision Input Virtual Space Mouse-Keyboard Control Panel Robot can be integrated to Home Appliances Automation by having the robot install on the home, and the robot consistently watching for the owner to making commands by their hand gestures and/or voice commands (by speech

reorganization software program) to operating each electric devices and turn ON/OFF individual lights at home. With a customized train robot to recognized a particular wood stick that can become a universal remote controller of all appliances at the home as a Magic Stick Remote controller instantly. The robot will simplify all the remote controllers at home into hand gestures commands and the robot assist people have more powerful access of their home devices in dynamic manners, and the proposal robot can help those people who has physical ability limitations operate their home devices as normal people do.

The Universal Video Computer Vision Input Virtual Space Mouse-Keyboard Control Panel Robot equipped microphone, sounds sensors, speech reorganization software's program to listening voice commands, and speakers to reading text, articles, communicate with users. The optional reading out of the user's each input character and commands as voice feedback that to aid users to know what key they entering.

The Universal Video Computer Vision Input Virtual Space Mouse-Keyboard Control Panel Robot equipped a Motor Vibrate Silent-Reading sub-robot module that comprise a micro controller as programmed brain, a 2 sections of vibrations surface for use to distinguished Long Short signal coding to get the reading Morse code text coding, 2 Seashell shape of Springs Coils attached on the each of motors to be spins (1 larger than the other) that will generate Long signal and short signal) and 2 motors (can be Step motors, or Servo motor, or DC motors), one motor for rotate short spin vibrations, and

the other motors for rotate long spin vibrations to generate silent-reading Morse code and standard text coding for users especially for people who can not see and can not hear. The micro controller connected a smart phone or wireless receiver device on the sub-robot itself and the sub robot Morse Code module has controlled by Universal Video Computer Vision Input Virtual Space Mouse-Keyboard Control Panel Robot's computer program through wireless technology protocols, such as Wi-Fi 802.11, Bluetooch, Wimax, IP and cell phone channels. As result, the Universal Video Computer Vision Input Virtual Space Mouse-Keyboard Control Panel Robot will command the sub-robot motor vibrate module to operate its motors spins to generate Long Short vibrate signals to represent Morse coding and/or standards text coding.

The proposal solution of this invention, Universal Video Computer Vision Input Virtual Space Mouse-Keyboard Control Panel Robot, is to benefit to everyone to use computers and machines without physical ability limitations and the proposal robot can improve current small keyboard space hard to typing problem on cell phone, portable devices; in addition, the proposal robot can integrated into home automations and reduce multiple remote controllers. The proposal robot can benefits to people to save time, space, materials, money and increase the dynamic computer, machines operating access manners and provide handful assist for users who have physical ability limitations to be able to operate computers and machines easier like normal people do.

Summary of the Invention

Universal Video Computer Vision Input Virtual Space Mouse-Keyboard Control Panel Robot has computer system use video vision camera sensors, logical vision sensor programming as trainable computer vision to allow users commands by their Hands gestures to virtually input data, and commands to operate computer, and machines.
The robot automatically translate the receiving coordination users' hand gesture actions puzzle-cell positions of working space and mapping to its software mapping lists for each of the puzzle-cell position definition and calibrate these user hand and/or body gestures' virtual space actions into entering data and commands to computer meaningful operations moving cursor UP, Down, Left, Right, Left Clicks, Right Clicks, typing Texts, Hand-Sign Languages ...etc.
The robot can be trained and taught to tracking on a specific object by recognize its shape, symbols and / or colors and optional embedded wireless sensors attached on the tracking objects that to enhance the object tracking reliable vision reading.
The equipped microphone, sounds sensors, speech reorganization software's program to listening voice commands, and speakers to reading text, articles, communicate with users.
The Robot equipped a Motor Vibrate Silent-Reading sub-robot module for produce vibrate Morse code signal coding and/ or standard texts vibrate signal coding.

The robot acts as Universal virtual Space Mouse, virtual Space Keyboard, and virtual Remote Controllers.

The proposal robot can benefits to people to save time, space, materials, money and increase the dynamic computer, machines operating access manners and provide handful assist for users who have physical ability limitations to be able to operate computers and machines easier like normal people do.

Brief Description of the Drawings

All of the objects of the invention are be list assigned number with reference to the drawings wherein:

FIG. 1 is a view showing the Universal Video Computer Vision Input Virtual Space Mouse-Keyboard Control Panel Robot detects user and automatically virtually projecting the working space zones, Virtual Space Mouse Zone, Virtual Space Keyboard Zone, and Hand-Sign Languages Zone between user and itself.

FIG. 2 is a view showing Virtual Space Mouse Zone details of how it works between Universal Video Computer Vision Input Virtual Space Mouse-Keyboard Control Panel Robot and the user.

FIG. 3 is a view showing Virtual Space Keyboard details of how it works between Universal Video Computer Vision Input Virtual Space Mouse-Keyboard Control Panel Robot and the user.

FIG. 4 is a view showing Hand-Sign Languages Zone details of how it works between Universal Video Computer Vision Input Virtual Space Mouse-Keyboard Control Panel Robot and the user.

FIG. 5(A) is a view showing Universal Video Computer Vision Input Virtual Space Mouse-Keyboard Control Panel Robot Part 1 of Initializes Sequence Steps to Anti-Unintentional-Unauthorized-Commands Inputs.

FIG. 5(B) is a view showing Universal Video Computer Vision Input Virtual Space Mouse-Keyboard Control Panel Robot Part 2 of Initializes Sequence Steps to Training Vision-Tracking Objects Inputs.

FIG. 6 is a view showing Universal Video Computer Vision Input Virtual Space Mouse-Keyboard Control Panel Robot equipped microphone, sounds sensors, speech recognition software program to listening user's voice commands, and equipped speaker to reading out text, article, to communicate with user; in addition, the robot also equipped a Motor Vibrate Silent-Reading sub-robot module.

FIG. 7 is a view showing Motor Vibrate Silent-Reading sub-robot module details of how its components works and how it works between Universal Video Computer Vision Input Virtual Space Mouse-Keyboard Control Panel Robot and the sub-robot to generate Morse code text vibrate signals for user silent reading articles from main computer.

FIG. 8 is a view showing the whole view of the invention robot (Home-base Type) has been install into user's home and has trainable computer vision to recognize the user's hand gestures commands with specific symbol shape, color, and/ or optional embedded wireless sensors for reliable vision tracking reading to remote control all of the appliances at user's property.

Description of the Preferred Invention Device

Referring FIG. 1 the illustrated components of the invention robot is Virtual Working Space 72 that robot automatically measurement and virtually project working space zones between user and itself.

When the robot's 1, sensor 5 detect user, and robot use video web camera2, and web camera 3, video vision camera sensor 6 to measure of user height and width, and automatically calibrated virtual working space 72, robot adjusting the distant between user and itself to projecting the Virtual Space Mouse zone 69, Virtual Space Keyboard 70, and Hand-Sign Languages Zone 71. The working space 72 can be selected and

choose to work on either one of these 3 space function zones, or to have divide whole working space 72 into 3 zones for space mouse, keyboard, and Hand-Sign Languages zone together. The connection 4 of sensor 5 and video sensor vision camera 6 can be connecting with robot by wire or wireless method.

Referring FIG. 2 the illustrated components of the invention robot is details how it works of Virtual Space Mouse zone. The robot 1 equipped video vision sensor camera 6, sensors 5, and web camera 2 for X, Y dimension tracking reading, web camera 3 for Z dimension tracking reading. The robot has logical vision tracking program 7 as trainable computer vision to constantly watching user's 11 hand gestures and tracking object movements. When user's 11 right hand move Up or Down, the robot logical vision tracking program 7 tracking will changing X surface direction15 and Y surface direction 17 to moving value of Up or Down., Left or Right, The robot's 1 logical vision tracking program 7 received dimension X, Y changing value that matched with the virtual calibrate Y line 21 's value, an the virtual calibrate X line 22 value of the virtual space position will be automatically to be translated by its Position Translate Program 20 into update Cursor's 26 X, Y position values on the computer monitor 25, to moving the cursors 26 to the right position on the monitor 25.

To move the pages on monitor around, the user 11 use left hand punch out gesture toward robot 1 as Mouse click and moving the right hand around. The robot logical vision tracking program 7 will changing the X surface direction 15 and Y surface direction 17, and confirm Z surface direction 18 values. The robot's Position Translate Program 20 convert the new tracking position XY value and Z value into mapping action value as

confirm Mouse click to drafting hold moving the page on the monitor screen Up, Down, Left and Right, accordingly to user right hand gesture movements.

To make Double Click, user 11 use left hand punch out gesture toward robot and back and toward action 13 two times, the robot 1 logical vision tracking program 7 tracking will changing the Z surface direction 19 twice value and Position Translate Program 20 convert the Z, Z value into mapping action value as double click.

To make Double Click, user 11 use left hand punch out gesture toward robot and back and toward action 13 three times, the robot's 1 logical vision tracking program 7 will changing the Z surface direction 19 Triple value and Position Translate Program 20 convert the z, z, z value into mapping action value as Right click.

For a precise Space Mouse operation, the user 11 hand's fingers can carry or wearing or drawing plural specific object's and variety shapes, colors, and/or embedded wireless sensors/LED lights, leaser beam Lights on the object.

The Robot's 1 has use video visual vision camera that able to watch user gesture XYZ dimension value at once, and logical vision tracking program 7 can be trained to tracking on very small of finger's movement gestures actions by lock on each individual specific object's shape, size, its colors and/or embedded wireless sensors/LED Lights, laser beam lights on the objects that user fingers carry or wear or draw on. For example, the user's 11 right hand's fingers have variety Star shape objects of vision tracking symbol 10 on his fingers, and left hand fingers have variety Heart shape objects of vision tracking symbols. The user can mimic Regular physical mouse operating actions in one hand in

Virtual Space Mouse zone, the robot able to precisely tracking fingers X, Y, Z gesture movements and perform the Virtual Space Mouse functions.

The demonstration method above use plural videos to watch XYZ dimensions is not a limitation. The robot 1 can use just one video camera, or use one web camera to perform the virtual space mouse functions as well. The logical vision-tracking program can intercept the video frames, and compare series video frames to have object's X, Y, Z dimension tracking value.

Referring FIG. 3 the illustrated components of the invention robot is details how it works of Virtual Space Keyboard zone. The robot 1 equipped video vision sensor camera 6, sensors 5, and web camera 2 for X, Y dimension tracking reading, web camera 3 for Z dimension tracking reading. The robot has logical vision tracking program 7 as trainable computer vision to constantly watching user's 11 hand gestures and tracking object movements. The robot 1 sensor 5 detect user, and robot use video web camera to measure of user height and width, and automatically calibrated working space 8, robot will virtual project the dimensions' axis G-Point 33 that represent the center point of whole working space 8 in relative 3D level user working space 8 of X dimension surface 32, Y dimension surface 29, and Z dimension surface 28. The user's 11 hand gesture's X, Y, Z space positions will be base on the relation distant of the G-Point 33, Example start point as (X0, Y0, Z0) the coordination will to be plus or minus as distant changed between the G-Point 33. The center of the Virtual Space Keyboard will be initialized at the point on

(X 0, Y0, Z0), The Virtual Space Keyboard Zone has calibrated into puzzle-cell positions 27. As the standard keyboard keys arrangements, the first right side puzzle-cell position key of G-Point 33 is representing "H" key, and the first left side of G-Point 33 is representing "G" key. The robot 1 is understood the physical keyboard key arrangements and each key's position, and the alignments angles relation of keyboard key lines arrangement. The robot 1 projecting the mimic physical keyboard alignments angles relation and arrange the puzzle-cell positions in keyboard style as Virtual Space Keyboard. When user's 11 right hand move to each puzzle-cell position for example, "H" key, and use left hand punch toward robot. The robot's logical vision tracking program 7 tracking will accept change Z surface direction 18, the Z dimension value 36 will be add –1 that confirm the selected key position changing X surface direction15, and the X dimension value 40 will be add 1 relative distant with robot's Vision-G-Point 38 center. The robot's 1 logical vision tracking program 7 received dimension X, Y changing value will be automatically to be translated by its Position Translate Program 39 into keyboard mapping listing, the new X tracking value 40 will be match on "H" key and display the "H" character 42 on the monitor 25.

The two steps Z value selections method, Example, Use "Shift" key or any special function keys, two steps, First, the user 11 place left hand to the puzzle-cell position on the relative "Shift" key space position and punch toward robot, the robot's 1 logical vision tracking program 7 accept the Z surface direction 18, the Z dimension value 36 will be add -1, and its Position Translate Program 39 into keyboard mapping listing

aware of that is a meaningful puzzle space as " Shift" key position, and user 11 hold left hand same position, and then Second, user move right hand to the "A" key position and then use left hand punch out toward robot further again to make confirm key selection and the robot 1 logical vision tracking program accept the Z surface direction 18, the Z dimension value 36 will be add –1 to be -2, and its Position Translate Program 39 into keyboard mapping listing aware of that is double " Shift" key twice will confirm the select key, and the new X surface direction 15, and the X dimension value 40 will be add –5 relative distant with robot's Vision-G-Point 38 center and the new Y surface direction 17, and the Y dimension value 40 will be add 0 relative distant with robot's Vision-G-Point 38 center, and its Position Translate Program 39 into keyboard mapping listing aware of that is a meaningful puzzle space as Capital " A" key. The same 2 steps principal method can apply to using "Ctrl", "Alt", Special function keys, "!", "@", "#", "$", "%", "^", "&", "*", "(", ")", "{", "}","|", "_", "+"...etc all of them that require two steps selection method.

The "Backspace", " Enter", " Arrow up", "Arrow Down", "Arrow Left", Arrow Right", "ESC", "Del", "Home", "End", "PgUp","PgDn", "Pause","PrtSc" keys are only require user 11 punch toward robot 1 time, the Position Translate Program 39 able to distinguish those special function key and perform the key selection function as one time.

For a precise Space standard Keyboard operation, the user 11 hand's fingers can carry or wearing or drawing plural specific object's and variety shapes, colors, and/or embedded wireless sensors/LED lights, leaser beam Lights on the object.

The Robot's 1 has use video visual vision camera that able to watch user gesture XYZ dimension value at once, and logical vision tracking program 7 can be trained to tracking on very small of finger's movement gestures actions by lock on each individual specific object's shape, size, its colors and/or embedded wireless sensors/LED Lights, laser beam lights on the objects that user fingers carry or wear or draw on. For example, the user's 11 right hand's fingers have variety Star shape objects of vision tracking symbol 10 on his fingers, and left hand fingers have variety Heart shape objects of vision tracking symbols. The user can mimic Regular physical keyboard operating actions in one hand in Virtual Space Mouse zone, the robot able to precisely tracking fingers X, Y, Z gesture movements and user 11 can use both hands typing on Virtual Space Keyboard to perform the Virtual Space Keyboard functions.

The demonstration method above use plural videos to watch XYZ dimensions is not a limitation. The robot 1 can use just one video camera, or use one web camera to perform the virtual space keyboard functions as well. The logical vision-tracking program can intercept the video frames, and compare series video frames to have object's X, Y, Z dimension tracking value.

Referring FIG. 4 the illustrated components of the invention robot is details how it works of Hand-Sign Languages zone. The robot 1 equipped video vision sensor camera 6, sensors 5, and web camera 2 for X, Y dimension tracking reading, web camera 3 for Z dimension tracking reading. The robot 1 sensor 5 detect user, and robot use video web camera to measure of user height and width, and automatically calibrated working space 8, robot will virtual project the dimensions' axis G-Point 33 that represent the center point of whole working space 8. The robot has logical vision tracking program 7 as trainable computer vision to constantly watching user's 11 hand gestures and tracking object movements. User 11 use both hands, the logical vision tracking program 7 as trainable computer vision to recognized both hand gestures, the computer vision program tracking users left hand each fingers positions 43, and also tracking users right hand each fingers position 44. The logical vision tracking program get the XYZ values on watching fingers, and setting the user's 11 both hand finger gesture's X, Y, Z space positions will be base on the relation distant of the G-Point 33. The robot's logical vision tracking program 7 tracking confirm each finger's XYZ position values 1 relative distant with robot's Vision-G-Point 38 center to understand where each finger hold in, which finger to point out as those standard Hand-Sign Language gestures. When user 11 need to rotate hands to turn or flip to make Hand-Sign Languages gestures, the robot 1 the logical vision tracking program 7 will tracking the fingers and hands' position changing each finger's X surface direction15, and the X dimension value 40, each finger's Y surface direction 17, and the Y dimension value 37, and each finger's Z surface direction 18, and the Z dimension value 36 will be add new values relative distant with robot's Vision-G-

Point 38 center. As the result, when the user rotate right hand and fingers gestures 43 down, and rotate left hand and fingers gestures 44 down. The robot logical program will get all the series XYZ position value of a Hand-Sign from user, the series XYZ position value 47 from user's 11 right hand and the series XYZ position 45 from users' 11 left hand. If user hold both hands together each other, the logical vision tracking program get the edge of hand gestures positions and get the 360 degree of gestures X, Y, Z dimension value will be add new values relative distant with robot's Vision-G-Point 38 center for each edge points of Hand-Sign gesture. The 360 degree of gestures X, Y, and Z dimension values will be arrange intro a series tracking value, The Hand-Sign 360 degree XYZ Position Translate Program 46 will match the series tracking value to get the specific Hand-Sign words that user's Hand Sign Language gesture. If user 11 make " Hello" Hand-Sign gesture, then the robot will get the "Hello" 48 word and display to monitor 25.

For a precise Hand-Sign reorganization, the user 11 hand's fingers can carry or wearing or drawing plural specific object's and variety shapes, colors, and/or embedded wireless sensors/LED lights, leaser beam Lights on the object.

The Robot's 1 has use video visual vision camera that able to watch user gesture XYZ dimension value at once, and logical vision tracking program 7 can be trained to tracking on very small of finger's movement gestures actions by lock on each individual specific object's shape, size, its colors and/or embedded wireless sensors/LED Lights, laser beam lights on the objects that user fingers carry or wear or draw on.

When train robot's logical vision tracking program 7 to recognize a special object such as a sharp point of a pen. The user 11 hold the sharp point of the pen face to robot, and start to move around the pen as it writing word on air or drawing a picture on air, the robot 1 watch each video frame and mark the sharp point of the pen XYZ value, and then update the value to monitor or a painting software, the series frames signals xyz values will compose into meaning symbolic character writing or a unique drawing picture from user 11. The robot will able to produce what word of the user write or the picture of the user by draws by its vision.

Referring FIG. 5(A) the illustrated components of the invention robot is the purpose and why Initializes Sequence Steps to Anti-Unintentional-Unauthorized-Commands Inputs. The purposes of Initialized Sequence Steps are follows:

1. From any User 11 want to let robot 1 know that he/she wish to start vision input data or command, the user's initialized sequence gesture actions will wake up the sleeping mode robot and start to accept user command.
2. From any User 11 move hands/ body gestures sequences; robot can recognized that the user has intention to enter data or commands, during the user making hand gesture actions, the robot accept XYZ value can determine that user's body position holding steady face it, and the user's 11 hands are moving around making proper X, Y dimension range on working space, from these gestures actions reading, robot able to determine that it is not just someone or something walking

through its virtual working space zones. The robot can determine the user has the intelligent/knowledge to use vision commands and intent to enter data and commands.

3. From any user 11 moving hand/body gestures sequences actions, the actions will help robot to measurement of user's proper working space, and setting the adjusting working space size and the 360 degree edge of working space (X, Y) and proper z dimension working space range, according what user's initial hand around space length range.
4. From Authority / robot owner User 11 will perform presetting personal unique gesture action sequences, for example user start to move right hand from A point 49 to B point and from B point 50 to C point and from C point 51 to D point and then from D point 52 back to A point, then use the left hand to do the opposite sequence backward. The robot's 1 logical vision tracking program 7 reading and Position Translate Program recognize the sequence actions that match with its presetting authority gestures sequences, knowing that the user is the owner, the master has the permission to use, setting any robot's administrate permission commands to program the robot's behavior, functions, and has right to train the robot to recognized focus on special objects...etc. The initial sequence steps can act as robot operation lock gates that user has the master permission, and/or has use the robot, or no permission to use it at all.

Referring FIG. 5(B) the illustrated components of the invention robot Part 2 of Initializes Sequence Steps to Training Vision-Tracking Objects Inputs.

When user 11 wants to train robot to special tracking on certain objects base on each individual specific object's shape, size, its colors and/or embedded wireless sensors/LED Lights, laser beam lights on the objects. The user 11 starts the robot's 1 logical vision-tracking program begins to record the objects that user want it to tracking on. The user 11 take the special tracking objects and moving them in directions let the robot video cameras 6, web camera 2, web camera 3 to video. For example, using 2 steps training object tracking, the first step, the user 11 has wear special objects start moving from E1 55 move toward robot direction 53 to arrive F1 point and still facing robot move down elevator direction 62 to arrive G1 point and move the objects back direction 61 to user to arrive H1 point 57 and from H1 point push toward robot direction 60 to arrive at I1 point, and objects still facing robot move up elevator direction 63 to arrive J1 point, and move the objects back to user direction 54 to E1 55 point.

The second step, the user move the objects from K2 point that represent the high traffic area of user working space zones start toward robot direction 58 to arrive L2 Point, and still object facing robot move back to user 11 direction 59 back to K2 point. The user repeat the K2 to L2 point moving several times, not only in straight line direction and also in circle direction motion within the high traffic working space zone. The user 11 move back to E1 start point and hold without moving object for seconds.

During the two steps of special object training vision tracking, the robot logical vision tracking program will compare the video frames in series, the program will match frames

and know to filter out the background of image signal that don't move, and logical vision tracking program compare video frame know what objects signals about its particular shape, size, color, and/or embedded wireless sensors/LED Lights, laser beam lights on the object indications that chance XYZ dimension value every time. The logical vision-tracking program 7 has learned the special object signals. As result, the robot vision become trained computer vision and knows what object that it needs to focus tracking on. The logical vision-tracking program 7 can also be hard coding manually programming by user as well for tracking on special object. The user can directly program at robot's 1 and set coding tracking on what shape of object, what size, what colors and/or if there is embedded wireless sensors, LED Lights, laser beam lights on the objects any indications to be vision tracking on. The logical vision-tracking program will base on the input object definition and looking only the object that matched. For example, to program logical vision tracking program to looking for a Yellow Sharp Pen, the robot vision will tracking on a Yellow Sharp Pen and knowing where it moving, follow the pen moving directions.

Referring FIG. 6 the illustrated components of the invention robot equipped microphone 68 as sound sensors to listening user voice commands, plural type of sensors 5, installed speech recognition software program 65 to recognized voice commands what to do, and equipped speaker 64 to reading out text in machine voice to communicate with user or to give user a voice feedback on what data, key or commands he/she entering; in addition, the robot also equipped a Motor Vibrate Silent-Reading sub-robot module 67. The robot's 1 voice feedback feature, voice command features and the Motor Vibrate silent-

reading sub-robot module 67 are designed for everyone who want to use, especially for useful help needs for user who has physical ability eyesight, or hearing, or speaking limitations.

Referring FIG. 7 the illustrated components of the invention robot is details how it woks of Motor Vibrate Silent-Reading sub-robot module. (Enlarge 67 sizes drawing for display the detail components) The sub-robot module contains two motors 75 (Servo motors, Step motors, DC motors) and 89 that control by micro controller 87. The sub-robot module can attach by smart phone adapter 84 with a smart phone 80, or Wi-Fi adapter with a Wi-Fi receiver 82, to wireless connected with robot 1 and/or use Series Port adapter 73 to wire cable connected with robot 1. The smart phone adapter 84 connect to micro controller by circle line 85, and Wi-Fi adapter connect to micro controller by circle line 86. The robot 1 can use the wireless connections protocols Bluetooch 79, Wi-Fi 802.11 protocol 81, cell phone channels protocols or wire Ethernet protocol connect to control the sub-robot module. For example, through the smart phone 80 and robot 1 sending commands to smart phone 80 to command operate the micro control 87 to spin its motors 75 and 89 in directions. The motor 75 has a small seashell shape spring coil 77 attached to be spin that cause smaller vibration or a short vibration signal when motor on, and the motor 89 has a larger seashell shape spring coil 90 attached to be spin that cause larger vibration or a long vibration signal when motor on. The motor 75 connect with

micro controller 87 through the signal circle line 74 for spin directions 78, and the motor 89 connect with micro controller 87 through the signal circle line 88 for spin directions 91. The robot 1 has a Morse code or standard text coding program it can convert the text of article into Morse code's long and short signals and robot 1 will sending commands to smart phone 80 to operating micro controller 87 to turn on long vibrate motor 89 or short vibrate motor 75 in Morse code series long short vibrate signals. In series actions of motor long and short vibrate Morse code signals as result the sub-robot module to generate a represent signal of a text or words sentences for user who carry it to silent reading the article info from robot 1. For a simple vibrate signal generation methods, each motor can attached a stick in horizontal position and when motor turn the stick slightly touch on users and back to the horizontal position, one for short signal and one for long signal.

The long short vibrate signals are not limited use seashell coils, or sticks, or any touching objects, the sub-robot module can simple to divide into 2 sections on the motor 75 half side vibrate surface is represent s short signal, and on the motor 89 half side vibrate surface is represent long signal.

With this Motor Vibrate Silent-Reading sub-robot module, the user who carries it will able to silent reading the articles from robot 1 computer.

Referring FIG. 8, the illustrated components of the invention robot, Home-base type of Universal Video Computer Vision Input Virtual Space Mouse-Keyboard Control Panel Robot 92 that equipped video web camera 93 for X, Y dimension tracking reading, video

web camera 96 for Z dimension tracking reading. The robot equipped plural various type of sensors 98 such a light sensor, touch sensor, sonar sensor, rotation sensor, video visual vision camera sensor, temperature sensor, sound sensor, ultrasonic sensor, infrared sensor, motor speed sensor, pressure sensor, angle degree sensor, etc.; the connection method 97 means between connection of sensors 98, and videos 99 to Robot 92 can be wire or wireless sensors network and video sensor cameras network. When the robot's 92, sensor 98 detect user, and robot use video web camera to measure of user height and width, and automatically calibrated working space 8, robot will virtual project the dimensions' axis G-Point 33 that represent the center point of whole working space 8 in relative 3D level user working space 8 of X dimension surface 32, Y dimension surface 29, and Z dimension surface 28. The user's 11 hand gesture's XYZ space positions will be base on the relation distant of the G-Point 33, Example start point as (X0, Y0, Z0) the coordination will to be plus or minus as distant changed between the G-Point 33. The Home-base Robot 92 has logical vision sensor software programming 106 as trainable computer vision that taught to consistently watching user 11 hand gestures' X, Y dimension actions 10, and Z dimension actions 13 to making virtual commands inputting data and operating commands. The Home-base Robot's 92 vision sensor software programming 106 has been trained to tracking lock on specific object's shape, size, its colors and/or embedded wireless sensors/LED Lights, leaser beam Lights on the object that user's 11 right hand has a Star shape object of vision tracking symbol 10, and left hand has Heart shape object of vision tracking symbol 12, by moving right hand gestures' X, Y dimension actions 10 on a specific puzzle-cell position 108 to select desire text or

command, and using left hand gesture for Z dimension actions 13 push left hand out toward robot computer to making confirm select action to acknowledging robot to accept user's virtual gesture's command of puzzle-cell position coordination within the virtual working space zone 8. The Home-base robot's 92 Puzzle-Cell Position Coordination Translate Program 94 will automatically translate the receiving XYZ coordination of users' hand gesture actions puzzle-cell position of working space 8 into Robot's Virtual Space Cell Position of Text & Command Conversion Respond Action Map Programming List 95, calibrate into respond action cells with map action X cell lines 111, and map action Y cell lines 109 and mapping match this translated virtual space cell position that from user with robot's software Virtual Space Cell Position Text & Command Respond Map Programming List 95 for each of the puzzle-cell position definition respond actions 112, and Robot has the ability to be able to calibrate those user's hand gestures virtual space actions convert into entering the selected text and command to execute computer meaningful operations to appliances such as TV 105, computer 104, Laptop 104, Light 102, iRobot vacuum Roomba , electronic door lock 100. Robot 92 can integrate with the Home Appliance Automation System 101 to control operating all of appliances at home. The robot also equipped plural video vision image sensor cameras 99 that can direct watch tracking object's XYZ dimensions actions and sending into robot's logical vision sensor software programming 106 for computer vision tracking on user's 11 each hand's XYZ dimension action, user use one hand to point on the puzzle-cell position and poking it toward robot to make confirm selected text or command. The user 11 has carry a Motor

Vibrate Silent–Reading sub robot module to received Long Short vibrate Morse code or standard text coding to reading articles from Robot's computer.

The plural video cameras 6 and plural types of sensors 98 that installed on each rooms of the property as video camera networking and sensors networking. The video camera 6 can install with a motor 114 that has holder 113 to hold the video camera 6 that controlled by robot 92, the robot's 92 vision sensors will tracking follow the user 11 special object where user moving to activate motor 114 to tracking rotate the video camera 6 changing direction to aiming video camera user 11 and specific tracking object where they are and waiting for any command from the user 11.

The Home-base Type robot 92 is design for everyone to increase their home in dynamic ways to operating computer and home appliances and the robot especially to provide handful assistances for users who have physical ability limitations to be able to operate computers and home appliances easier like normal people do.

A practical software and hardware example solution to built as Universal Video Computer Vision Input Virtual Space Mouse-Keyboard Control Panel Robot using Microsoft Windows technology.

1. Computer hardware can run Windows XP with SP2.
2. Web camera that has Direct captures driver/ Window Driver/ or Support video for window capture.
3. Microsoft Robotics Studio software.
4. . Net Frameworks 3 .0 software.

5. Microsoft Internet Explorer / Web Browser.
6. Create a Web camera Interface.minifest.xml file from writing a Logical vision tracking software program (C / VB.net languages) that compiled by Microsoft robotics studio and run the interface.minifest.xml file to create a web camera service that run on the PC as robot vision. The logical vision tracking software program can be coding more advance features such as to tracking a special object by it color (RBG values), size, shapes (Circle...etc), and other type of data from a video frame.
7. The PC robot become a trainable computer vision robot and able to tracking specific objects.
8. Logical vision tracking program has programming coding of UpdateFrame, QueryFrame, TimeStemp, Length, Data of coding to trigger the latest video frame and store video fame, and compare the video frames and it extract the object's XYZ dimension surface direction values.
9. Software program / script will according to its initialized Vision-G-Point distant relation to update the new XYZ position values.
10. Position translate program to match the new XYZ position values with its define respond actions such as Mouse Cursor Up, or Down, or clicks, on the specific mapping position that command or function assigned.
11. Position translate program will auto execute the computer operation of the commands or to enter typing character that user command by hand gestures.

12. Command operation completed, robot vision watching, and waiting for another action from user.
13. If the user command robot to read the article in silent-reading functions, the robot will remote control to Motor Vibrate Silent-Reading sub-robot module and transmit the Morse coding for each words and sentence through wireless with Bluetooth protocol to connect smart phone that adapted on the sub-robot and to operate the micron controller to spin the Long, Short motors to generate Long Short vibrate Morse Code for the user to read the article from PC-base robot.
14. If the user need to robot speak machine voice feedback, then the robot activate the speaker and with speech recognize software program to make text-speech conversation and read out the machine voice to communicate with user. The robot able to hear user voice commands as well from microphone, sound sensors.
15. For total tracking vision especially for Home-base type robot, video camera install on each room with motor that hold it, and the motor spins directions to be control by the robot vision sensors and will able to rotate video camera to following where the user, specific tracking object on the room.
16. The variety types of sensors such a light sensor, touch sensor, sonar sensor, rotation sensor, video visual vision camera sensor, temperature sensor, sound sensor, ultrasonic sensor, infrared sensor, motor speed sensor, pressure sensor, angle degree sensor, etc that installed to be a sensor networks and different types of sensors reading signals can be unify into XML, a same signals format, which can be used by the robot for advance intelligent robot performance.

The example solution is base on Microsoft Windows Technology, there are other methods to create vision robot such as use Linux, and HP Image Sensor video camera, and Windows CE embedded. ...Etc. The programming languages can be other type like C++, Java, and Visual Programming Language.Etc. There are also some vision tracking software and vision image camera sensor tools are available on particular commercial companies. Those are other solutions to create this invention proposal of Universal Video Computer Vision Input Virtual Space Mouse-Keyboard Control Panel Robot.

The features of the Universal Video Computer Vision Input Virtual Space Mouse-Keyboard Control Panel Robot built into a single microchip.

The virtual space mouse-keyboard control panel robot's translate space gestures actions with software mapping key listing method into entering data and commands to operating computer, This method can be built/embedded into a microchip, or a processor, or a video processor that contains these four sections of intelligent virtual space-commands software programs / scripts that demonstrated above, and with three working space calibrate alignment arrangement standard for create virtual Space Mouse, Virtual Space keyboard, and Hand-Sign Languages patterns.

The 4 sections of intelligent virtual space-commands conversation software are

1. The Logical Vision Tracking Program,

2. X, Y, and Z surface direction following program,
3. The X, Y, Z dimension value program, and
4. X, Y, and Z Position Translate Program

The processor contains three working space calibrate alignment arrangement standard for Mouse, keyboard, and Hand-Sign Languages patterns to automatically initialize the virtual working space of Virtual Space Mouse, Virtual Space Keyboard, and Hand-Sign Languages Zones for computer, machines able to use computer vision method to watching user gestures actions to perform Mouse, Keyboard, Hand-Sign Languages that mapping the received gesture's action position value into practical computer commands. The Virtual Space Mouse-Keyboard Control Panel Robot microchip can install on to any computer, machine, and appliance at home, and able to connect the video vision camera sensor, running by Windows XP, CE embedded, or Linux ...etc operation software to provide the virtual space mouse, space keyboard on those computer, and machines.

While the preferred embodiments of the invention have been described above. It will be recognized and understood that various modifications may be made therein without departing from the spirit of essential attributes thereof, and it is desired therefore that only such limitations be placed thereon as are imposed by the appended claim.

I Claims:

1. A vision space mouse-keyboard control panel Robot has computer system use video vision camera sensors, logical vision sensor programming as trainable computer vision seeing objects movements X, Y, Z dimensions' definitions to recognize users commands by their Hands gestures and/or enhance symbols, colors objects combination actions to virtually input data, and commands to operate computer, and machines.
2. A vision space mouse-keyboard control panel Robot according to Claim 1 wherein said has automatically calibrated working space into Space Mouse Zone, Space Keyboard zone, and Hand-Sign Languages Zone between user and itself.
3. A vision space mouse-keyboard control panel Robot according to Claim 1 wherein said automatically translate the receiving coordination users' hand gesture actions combinations on the customizable puzzle-cell positions of working space and mapping to its software mapping lists for each of the puzzle-cell position definition.
4. A vision space mouse-keyboard control panel Robot according to Claim 3 wherein said the calibrate puzzle-cell position has define meaning that mapping on its software program for robot to transfer the virtual hands gesture actions into entering data and commands to operating computer, machines and the robot act as

Universal virtual Space Mouse, virtual Space Keyboard, and virtual Remote Controllers.

5. A vision space mouse-keyboard control panel Robot according to Claim 4 wherein said Calibrate these user hand and/or body gestures' virtual space actions into entering data and commands to computer meaningful operations moving cursor UP, Down, Left, Right, Clicks, typing Texts, Hand-Sign Languages reading, Symbol Character Writing, and Drawings and commands to operate machines, and home appliances.
6. A vision space mouse-keyboard control panel Robot according to Claim 1 wherein said computer vision consistently watching and to recognized user hands gesture movements coordinating with its define puzzle-cell positions of the virtual projecting working space zones that robot will automatically translate the receiving coordination users' hand gesture actions on the puzzle-cell positions' combinations and mapping to its software mapping lists for each the puzzle-cell position definition and calibrate these user hand and/or body gestures' space actions into computer meaningful operations such as Virtual Space Mouse input that moving cursor UP, Down, Left, Right, Left Clicks, Right Clicks, and also as Virtual Keyboard enter text, character input as to typing characters and function keys such as a, A, b, B, c, C, Backspace, Ctrl, Shift, Del, Enter key, computer operation commands.
7. A vision space mouse-keyboard control panel Robot according to Claim 2 wherein said also able to provide Hand-Sign Languages reading from user's

hands and/ or body gesture according to its preprogram listing of hand-sign languages gesture patterns and grammars, robot can recognize what words and/or commands that user wants to enter.

8. A vision space mouse-keyboard control panel Robot according to Claim 7 wherein said can be enable symbolic characters writing such as Chinese characters, and drawing a picture into computer by user's hand gestures' movements.
9. A vision space mouse-keyboard control panel Robot according to Claim 1 wherein said can be trained and taught to tracking on a specific object by recognize its shape, symbols and / or colors and optional embedded wireless sensors attached on the tracking objects that to enhance the object tracking reliable vision reading and also to fit user's usage preferences, especially for those who have physical limitation special needs to operate the computer or machine.
10. A vision space mouse-keyboard control panel Robot according to Claim 3 wherein said the puzzle-cell positions of Space Mouse, and Space Keyboard of the robot can be customized. The puzzle-cell position of space zone to allow user to reprogram the standard working zone positions of Space Mouse, and Space Keyboard to be customized the certain keys rearrangements, and setting up for the certain puzzle-cell position of working space zone for certain meaning of text and commands to represented.
11. A vision space mouse-keyboard control panel Robot according to Claim 1 wherein said can be integrated to Home Appliances Automation by having the

robot install on the home, and the robot consistently watching for the owner to making commands by their hand gestures and/or voice commands (by speech reorganization software program) to operating each electric devices and turn ON/OFF individual lights at home.

12. A vision space mouse-keyboard control panel Robot according to Claim 11 wherein said will simplify all the remote controllers for all of appliance at home into hand gestures commands.
13. A vision space mouse-keyboard control panel Robot according to Claim 12 wherein said With a customized train robot to recognized a any particular wood stick that can become a universal remote controller of all appliances at the home as a Magic Stick Remote controller instantly.
14. A vision space mouse-keyboard control panel Robot according to Claim 1 wherein said Robot equipped microphone, sounds sensors, speech recognition software program to listening user's voice commands, and equipped speaker to reading out text, article, to communicate with user. The optional reading out of the user's each input character and commands as voice feedback that to aid users to know what key they entering; in addition, the robot also equipped a Motor Vibrate Silent-Reading sub-robot module.
15. A vision space mouse-keyboard control panel Robot according to Claim 14 wherein said equipped a Motor Vibrate Silent-Reading sub-robot module that comprise a micro controller as programmed brain, a 2 sections of vibrations surface for use to distinguished Long Short signal coding to get the reading Morse

code text coding, 2 Seashell shape of Springs Coils attached on the each of motors to be spins (1 larger than the other) that will generate Long signal and short signal) and 2 motors (can be Step motors, or Servo motor, or DC motors), one motor for rotate short spin vibrations, and the other motors for rotate long spin vibrations to generate silent-reading Morse code and standard text coding for users especially for people who can not see and can not hear.

16. A vision space mouse-keyboard control panel Robot according to Claim 15 wherein said is to benefit to everyone to use computers and machines without physical ability limitations and the proposal robot can improve current small keyboard space hard to typing problem on cell phone, portable devices; in addition, the proposal robot can integrated into home automations and reduce multiple remote controllers, and provide handful assist for users who have physical ability limitations to be able to operate computers and machines easier like normal people do.
17. A vision space mouse-keyboard control panel Robot according to Claim 1 wherein said Initializes Sequence Steps to Training Vision-Tracking Objects Inputs. Logical vision tracking program can be trained to tracking on very small of finger's movement gestures actions by lock on each individual specific object's shape, size, its colors and/or embedded wireless sensors/LED Lights, laser beam lights on the objects that user fingers carry or wear or draw on.
18. A vision space mouse-keyboard control panel Robot according to Claim 18 wherein said has trainable computer vision to recognize the user's hand gestures

commands with specific symbol shape, size, color, and/ or optional embedded wireless sensors, LED lights, Laser beam Lights for reliable vision tracking reading to remote control all of the appliances at user's property.

19. A vision space mouse-keyboard control panel Robot according to Claim 12 wherein said Virtual Working Space that robot automatically measurement and virtually project working space zones between user and itself.
20. A vision space mouse-keyboard control panel Robot according to Claim 20 wherein said When the robot sensor detect user, and robot use video web cameras, video vision camera sensor to measure of user height and width, and automatically calibrated virtual working space, robot adjusting the distant between user and itself to projecting the Virtual Space Mouse zone, Virtual Space Keyboard, and Hand-Sign Languages Zone.
21. A vision space mouse-keyboard control panel Robot according to Claim 21 wherein said the working space can be selected and choose to work on either one of these 3 space function zones, or to have divide whole working space into 3 zones for space mouse, keyboard, and Hand-Sign Languages zone together.
22. A vision space mouse-keyboard control panel Robot according to Claim 1 wherein said The robot 1 equipped plurality video vision sensor cameras, sensors, and web cameras for X, Y, Z dimension tracking reading.
23. A vision space mouse-keyboard control panel Robot according to Claim 23 wherein said logical vision tracking program tracking will changing X surface

direction, Y surface direction, Z surface direction to virtual space XYZ value relative distant with robot's Vision-G-Point center.

24. A vision space mouse-keyboard control panel Robot according to Claim 24 wherein said Position Translate Program convert the new tracking position space XYZ value into its mapping computer operation actions to auto execute the commands that by user hand gestures actions.

25. A vision space mouse-keyboard control panel Robot according to Claim 2 wherein said Virtual Space Zone that user able to use hand gesture to moving the cursors position on the monitor, and perform Mouse click to drafting hold moving the page on the monitor screen Up, Down, Left and Right, accordingly to user hands gesture movements in X, Y dimension surface position, and user able virtually to Double Click mouse button, or Right click button by changing user hand gesture Z dimension surface position toward the robot as clicks actions.

26. A vision space mouse-keyboard control panel Robot according to Claim 26 wherein said The user can mimic Regular physical mouse operating actions in one hand in Virtual Space Mouse zone, the robot able to precisely tracking fingers X, Y, Z gesture movements and perform the Virtual Space Mouse functions.

27. A vision space mouse-keyboard control panel Robot according to Claim 2 wherein said The Virtual Space Keyboard Zone has calibrated into puzzle-cell positions. As the standard keyboard keys arrangements, the first right side puzzle-cell position key of G-Point is representing "H" key, and the first left side of G-Point is representing "G" key.

28. A vision space mouse-keyboard control panel Robot according to Claim 28 wherein said The robot sensor detect user, and robot use video web camera to measure of user height and width, and automatically calibrated working space, robot will virtual project the dimensions' axis G-Point that represent the center point of whole working space in relative 3D level user working space of X dimension surface , Y dimension surface , and Z dimension surface . The user's hand gesture's X, Y, Z space positions will be base on the relation distant of the G-Point.
29. A vision space mouse-keyboard control panel Robot according to Claim 29 wherein said projecting the mimic physical keyboard alignments angles relation and arrange the puzzle-cell positions in keyboard style as Virtual Space Keyboard.
30. A vision space mouse-keyboard control panel Robot according to Claim 28 wherein said When user select "H" key", The robot's logical vision tracking program tracking will accept user hand gesture position change Z surface direction toward the robot, the Z dimension value will be add –1 that confirm the user selected key position changing X surface direction, and the X dimension value will be add 1 since the "H" key is relative one right-side key distant with robot's Vision-G-Point center.
31. A vision space mouse-keyboard control panel Robot according to Claim 31 wherein said The robot's logical vision tracking program received dimension X, Y changing value will be automatically to be translated by its Position Translate

Program into keyboard mapping listing, the new X tracking value will be match on "H" key and display the "H" character on the monitor.

32. A vision space mouse-keyboard control panel Robot according to Claim 32 wherein said The two steps Z value selections method, Example, Use Space "Shift" key or any special function keys, two steps to accept the Z surface direction, the user punch out on left hand on "Shift" key position, the Z dimension value will be add -1, and robot's Position Translate Program map value into keyboard mapping listing aware of that is a meaningful puzzle space as " Shift" key position, and wait for the Second selection, then user move right hand to the "A" key position and then use left hand punch out toward robot further again to make confirm key selection and the robot logical vision tracking program accept the Z surface direction, the Z dimension value will be add –1 to be -2, and its Position Translate Program into keyboard mapping listing aware of that is double " Shift" key twice will confirm the select key, and the new X surface direction, and the X dimension value will be add –5 relative distant with robot's Vision-G-Point center and the new Y surface direction, and the Y dimension value will be add 0 relative distant with robot's Vision-G-Point center, and its Position Translate Program into keyboard mapping listing aware of that is a meaningful puzzle space as Capital " A" key.

33. A vision space mouse-keyboard control panel Robot according to Claim 33 wherein said The same 2 steps special function keys selection principal method can apply to using "Ctrl", "Alt", Special function keys, "!", "@", "#", "$", "%",

"^", "&", "*", "(", ")", "{", "}","|", "_", "+" all of keys that require two steps selection method.

34. A vision space mouse-keyboard control panel Robot according to Claim 7 wherein said The robot's logical vision tracking program tracking confirm each finger's XYZ position values relative distant with robot's Vision-G-Point center to understand where each finger hold in, which finger to point out as those standard Hand-Sign Language gestures.

35. A vision space mouse-keyboard control panel Robot according to Claim 35 wherein said The Hand-Sign 360 degree XYZ Position Translate Program will match the series tracking value to get the specific Hand-Sign words that user's Hand Sign Language gesture.

36. A vision space mouse-keyboard control panel Robot according to Claim 36 wherein said train robot's logical vision tracking program to recognize a special object such as a sharp point of a pen. The user hold the sharp point of the pen face to robot, and start to move around the pen as it writing word on air or drawing a picture on air, the robot watch each video frame and mark the sharp point of the pen XYZ value, and then update the value to monitor or a painting software, the series frames signals xyz values will compose into meaning symbolic character writing or a unique drawing picture from user.

37. A vision space mouse-keyboard control panel Robot according to Claim 1 wherein said Initializes Sequence Steps to Anti-Unintentional-Unauthorized-Commands Inputs.

38. A vision space mouse-keyboard control panel Robot according to Claim 37 wherein said the user's initialized sequence gesture actions will wake up the sleeping mode robot and start to accept user command.
39. A vision space mouse-keyboard control panel Robot according to Claim 38 wherein said from user initialized sequence gesture actions, robot able to determine that it is not just someone or something walking through its virtual working space zones. The robot can determine the user has the intelligent/knowledge to use vision commands and intent to enter data and commands.
40. A vision space mouse-keyboard control panel Robot according to Claim 39 wherein said initialized hand/body gestures sequences actions, the actions will help robot to measurement of user's proper working space, and setting the adjusting working space size and the 360 degree edge of working space (X, Y) and proper z dimension working space range, according what user's initial hand around space length range.
41. A vision space mouse-keyboard control panel Robot according to Claim 40 wherein said From Authority / robot owner User will perform presetting personal unique gesture action sequences, Position Translate Program recognize the sequence actions that match with its presetting authority gestures sequences, knowing that the user is the owner, the master has the permission to use, setting any robot's administrate permission commands to program the robot's behavior, functions, and has right to train the robot to recognized focus on special object..

The initial sequence steps can act as robot operation lock gates that user has the master permission, and/or has use the robot, or no permission to use it at all.

42. A vision space mouse-keyboard control panel Robot according to Claim 18 wherein said Initializes Sequence Steps to Training Vision-Tracking Objects Inputs, user using 2 steps training object tracking, the first step, the user 11 has wear special objects start moving object around working space, and the second step, the user move the objects from the high traffic area of user working space zones. During the two steps of special object training vision tracking, the robot logical vision tracking program will compare the video frames in series, the program will match frames and know to filter out the background of image signal that don't move, logical vision tracking program compare video frame know what objects signals about its particular shape, size, color, and/or embedded wireless sensors/LED Lights, laser beam lights on the object indications that chance XYZ dimension value every time. The logical vision-tracking program has learned the special object signals to be tracking.

43. A vision space mouse-keyboard control panel Robot according to Claim 42 wherein said the logical vision-tracking program can also be hard coding manually programming by user as well for tracking on special object. The user can directly program at robot's and set coding tracking on what shape of object, what size, what colors and/or if there is embedded wireless sensors, LED Lights, laser beam lights on the objects any indications to be vision tracking on. The

logical vision-tracking program will base on the input object definition and looking only the object that matched

44. A vision space mouse-keyboard control panel Robot according to Claim 1 wherein said The robot has a Morse code or standard text coding program it can convert the text of article into Morse code's long and short signals and robot will sending commands to smart phone to operating micro controller to turn on long vibrate motor or short vibrate motor in Morse code series long short vibrate signals. In series actions of motor long and short vibrate Morse code signals as result the sub-robot module to generate a represent signal of a text or words sentences for user who carry it to silent reading the article info from robot .

45. A vision space mouse-keyboard control panel Robot according to Claim 44 wherein said vibrate signal generation option methods, each motor can attached a stick in horizontal position and when motor turn the stick slightly touch on users and back to the horizontal position, one for short signal and one for long signal.

46. A vision space mouse-keyboard control panel Robot according to Claim 44 wherein said vibrate signal generation option methods the sub-robot module can simple to divide into 2 sections on the left half side vibrate surface is represent short signal, and on the right half side vibrate surface is represent long signal.

47. A vision space mouse-keyboard control panel Robot according to Claim 1 wherein said Home-base type of Virtual Space Mouse-Keyboard Control Panel Robot that equipped video web camera for X, Y dimension tracking reading, video web camera for Z dimension tracking reading. The robot equipped plural

type of sensors; the connection method means between connection of sensors, and videos to Robot can be wire or wireless sensors network and video sensor cameras network.

48. A vision space mouse-keyboard control panel Robot according to Claim 47 wherein said Puzzle-Cell Position Coordination Translate Program will automatically translate the receiving XYZ coordination of users' hand gesture actions puzzle-cell position of working space. Robot's Virtual Space Cell Position of Text & Command Conversion Respond Action Map Programming List and mapping match this translated virtual space cell position that from user with robot's software Virtual Space Cell Position Text & Command Respond Map Programming List for each of the puzzle-cell position definition respond actions
49. A vision space mouse-keyboard control panel Robot according to Claim 48 wherein said Robot has the ability to be able to calibrate those user's hand gestures virtual space actions convert into entering the selected text and command to execute computer meaningful operations to appliances such as TV, computer, Laptop, Light, iRobot vacuum Roomba , electronic door lock.
50. A vision space mouse-keyboard control panel Robot according to Claim 49 wherein said Robot can integrate with the Home Appliance Automation System and user, home owner can use their gestures action to control operating all of appliances at home.
51. A vision space mouse-keyboard control panel Robot according to Claim 50 wherein said the plural video cameras and plural types of sensors that installed on

each rooms of the property as video camera networking and sensors networking. The video camera can install with a motor that has holder to hold the video camera that controlled by robot, the robot's vision sensors will tracking follow the user special object where user moving to activate motor to tracking rotate the video camera changing direction to aiming video camera user and specific tracking object where they are and waiting for any command from the user.

52. A vision space mouse-keyboard control panel Robot according to Claim 51 wherein said the user command robot to read the article in silent-reading functions, the robot will remote control to Motor Vibrate Silent-Reading sub-robot module and transmit the Morse coding for each words and sentence through wireless with Bluetooth protocol to connect smart phone that adapted on the sub-robot and to operate the micron controller to spin the Long, Short motors to generate Long Short vibrate Morse Code for the user to read the article from PC-base robot.

53. A vision space mouse-keyboard control panel Robot according to Claim 51 wherein said the user need to robot speak machine voice feedback, then the robot activate the speaker and with speech recognize software program to make text-speech conversation and read out the machine voice to communicate with user. The robot able to hear user voice commands as well from microphone, sound sensors.

54. A vision space mouse-keyboard control panel Robot according to Claim 52 wherein said total tracking vision especially for Home-base type robot, video

camera install on each room with motor that hold it, and the motor spins directions to be control by the robot vision sensors and will able to rotate video camera to following where the user, specific tracking object on the room.

55. A vision space mouse-keyboard control panel Robot according to Claim 1 wherein said the robot able to use variety types of sensors that installed to be a sensor networks and different types of sensors reading signals can be unify into XML, a same signals format, which can be used by the robot for advance intelligent robot performance.

56. A vision space mouse-keyboard control panel Robot according to Claim 1 wherein said the features of the Universal Video Computer Vision Input Virtual Space Mouse-Keyboard Control Panel Robot built into a single microchip.

57. A vision space mouse-keyboard control panel Robot according to Claim 56 wherein said the virtual space mouse-keyboard control panel robot's translate space gestures actions with software mapping key listing method into entering data and commands to operating computer, This method can be built/embedded into a microchip, or a processor, or a video processor that contains these four sections of intelligent virtual space-commands software programs / scripts that demonstrated above, and with three working space calibrate alignment arrangement standard for create virtual Space Mouse, Virtual Space keyboard, and Hand-Sign Languages patterns.

58. A vision space mouse-keyboard control panel Robot according to Claim 57 wherein The 4 sections of intelligent virtual space-commands conversation

software are 1.The Logical Vision Tracking Program, 2. X, Y, and Z surface direction following program, 3. The X, Y, Z dimension value program, and 4. X, Y, and Z Position Translate Program.

59. A vision space mouse-keyboard control panel Robot according to Claim 57 wherein said the processor contains three working space calibrate alignment arrangement standard for Mouse, keyboard, and Hand-Sign Languages patterns to automatically initialize the virtual working space of Virtual Space Mouse, Virtual Space Keyboard, and Hand-Sign Languages Zones

60. A vision space mouse-keyboard control panel Robot according to Claim 57 wherein said the Virtual Space Mouse-Keyboard Control Panel Robot microchip can install on to any computer, machine, and appliance at home, and able to connect the video vision camera sensor, running by Windows XP, CE embedded, or Linux operation software to provide the virtual space mouse, space keyboard on those computer, and machines.

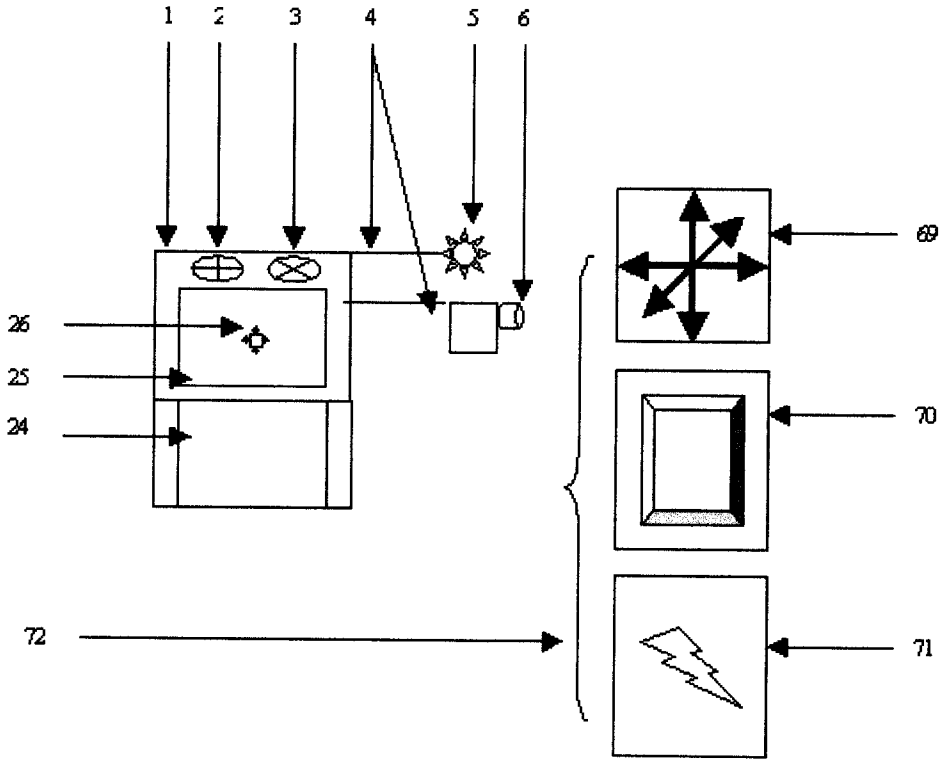


Fig. 1

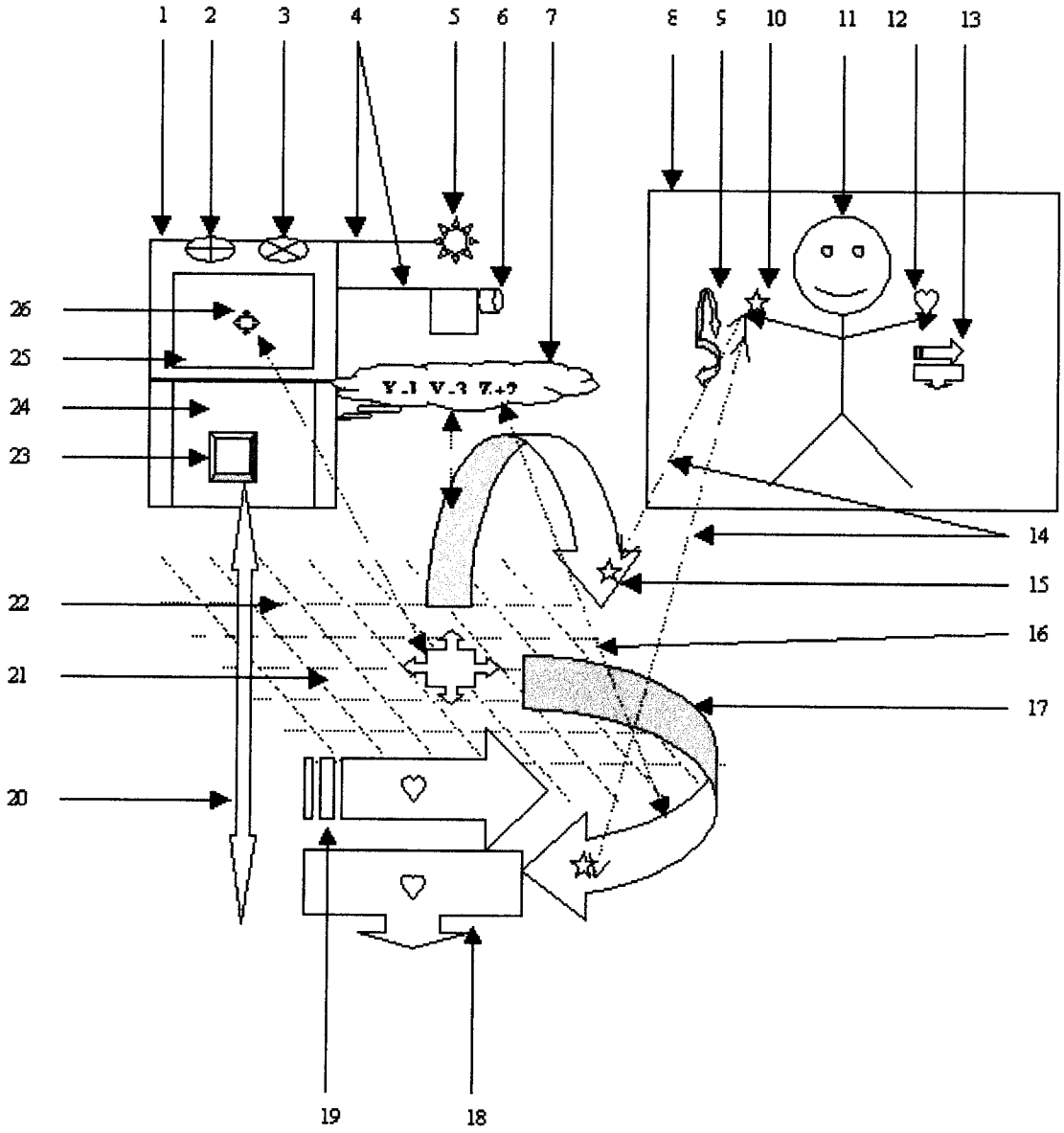
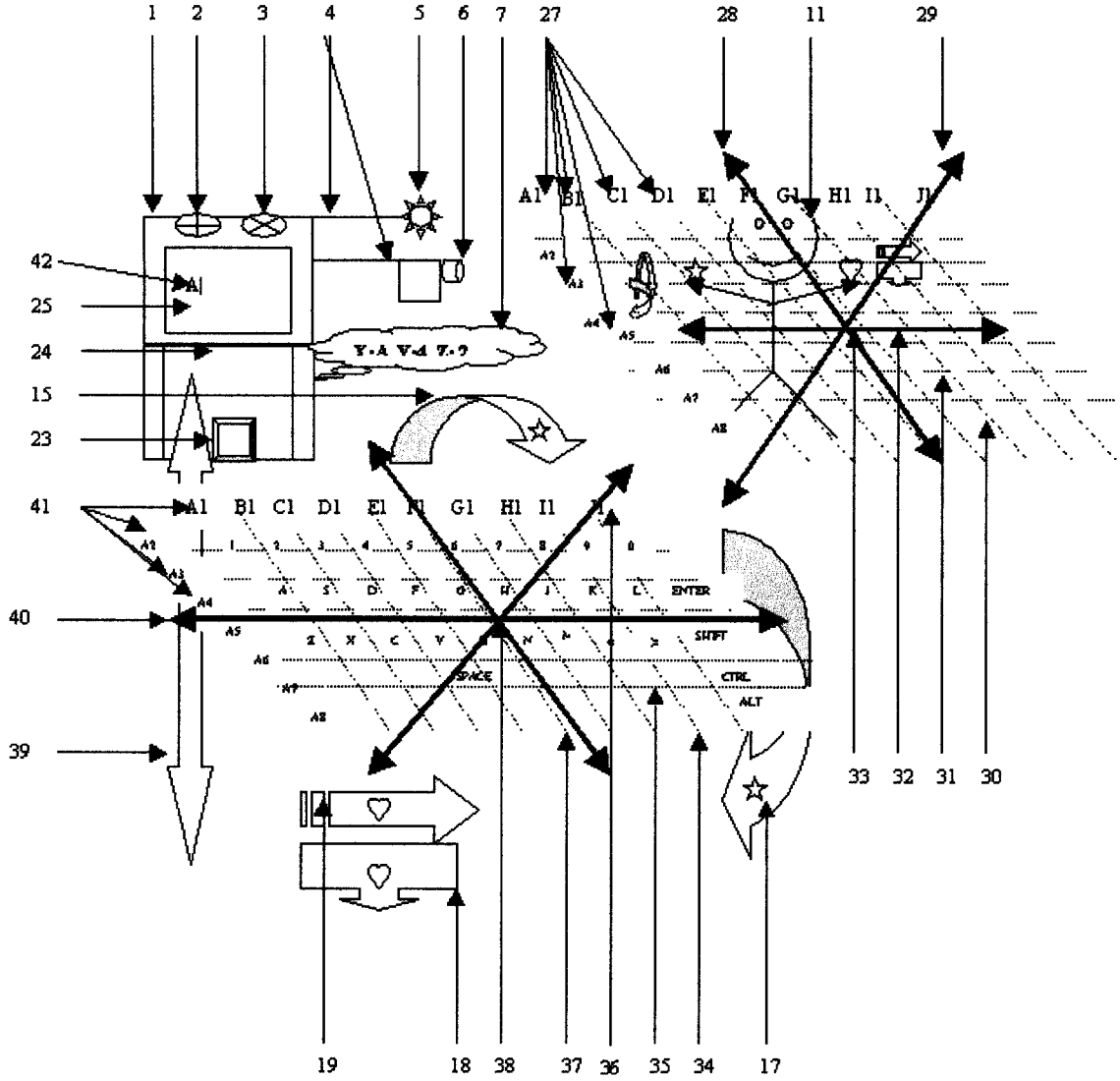


Fig. 2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39
A1 B1 C1 D1 E1 F1 G1 H1 I1 J1
ENTER
SHIFT
CTRL
ALT
SPACE
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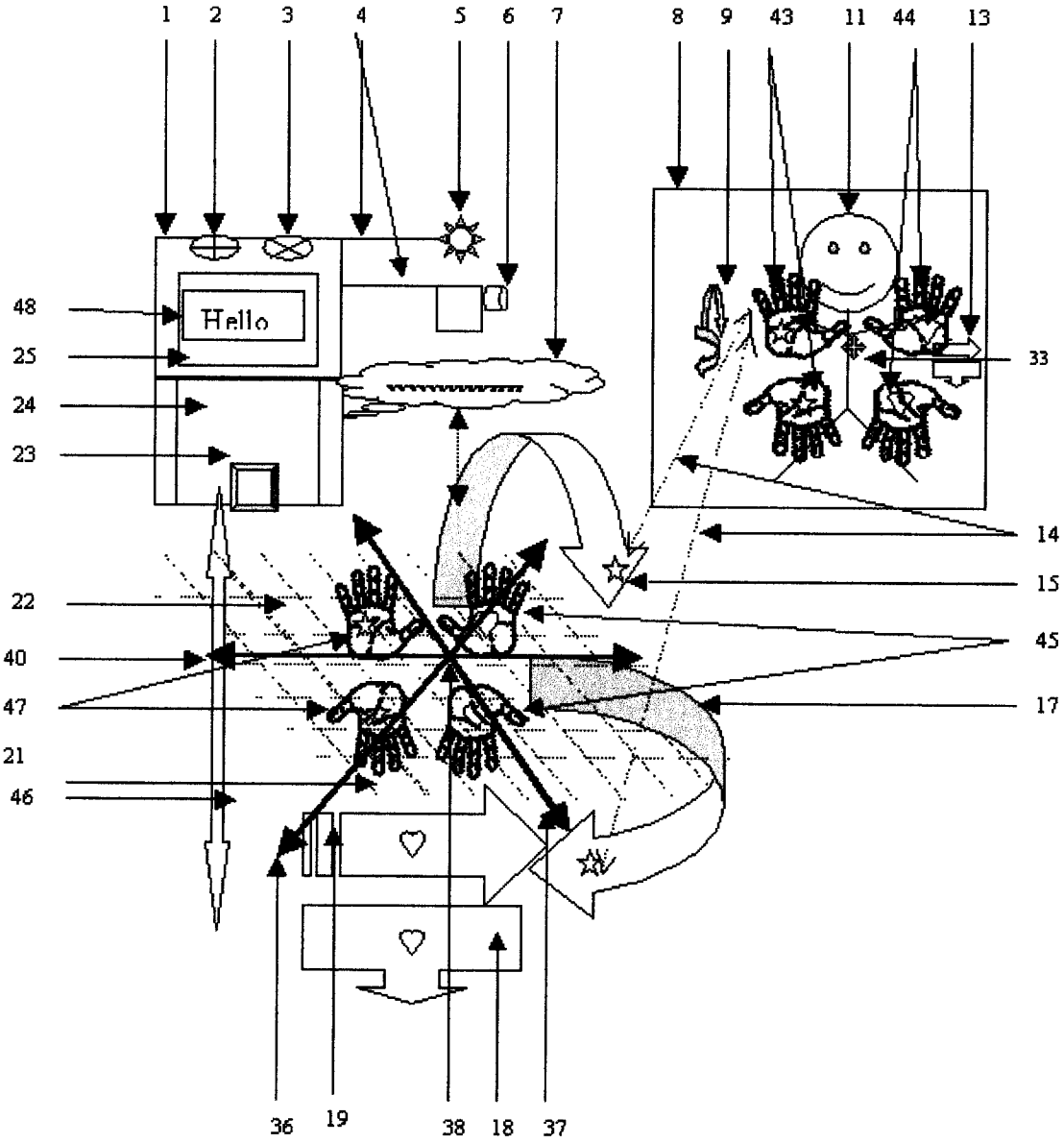
Fig. 3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Hello
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Fig. 4

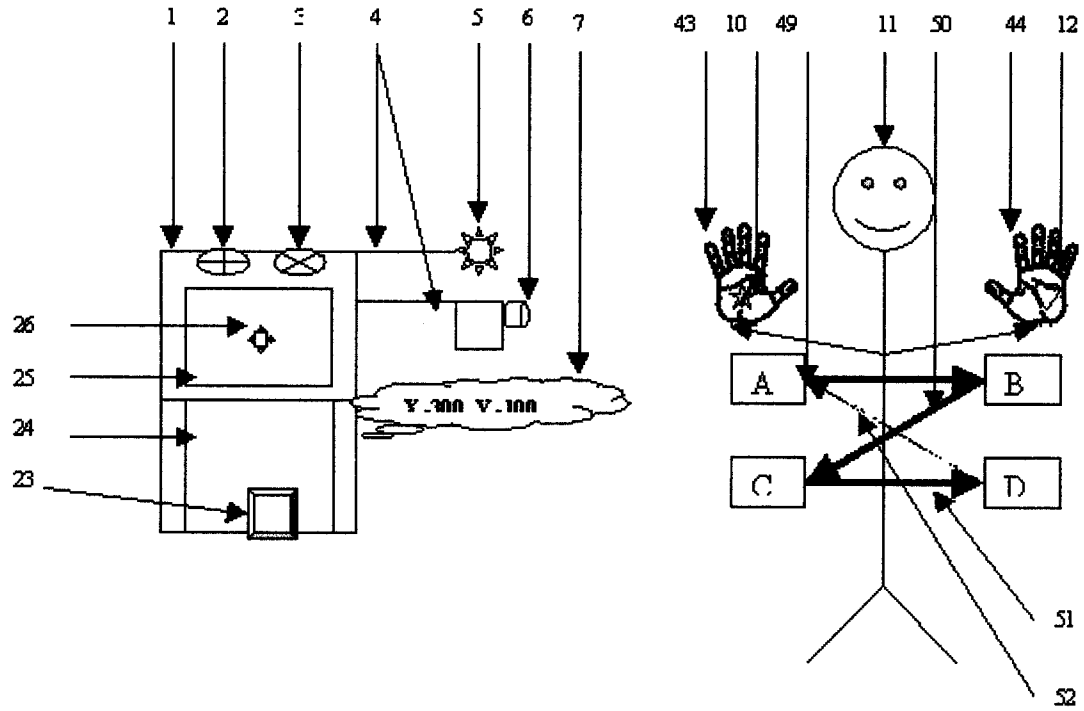
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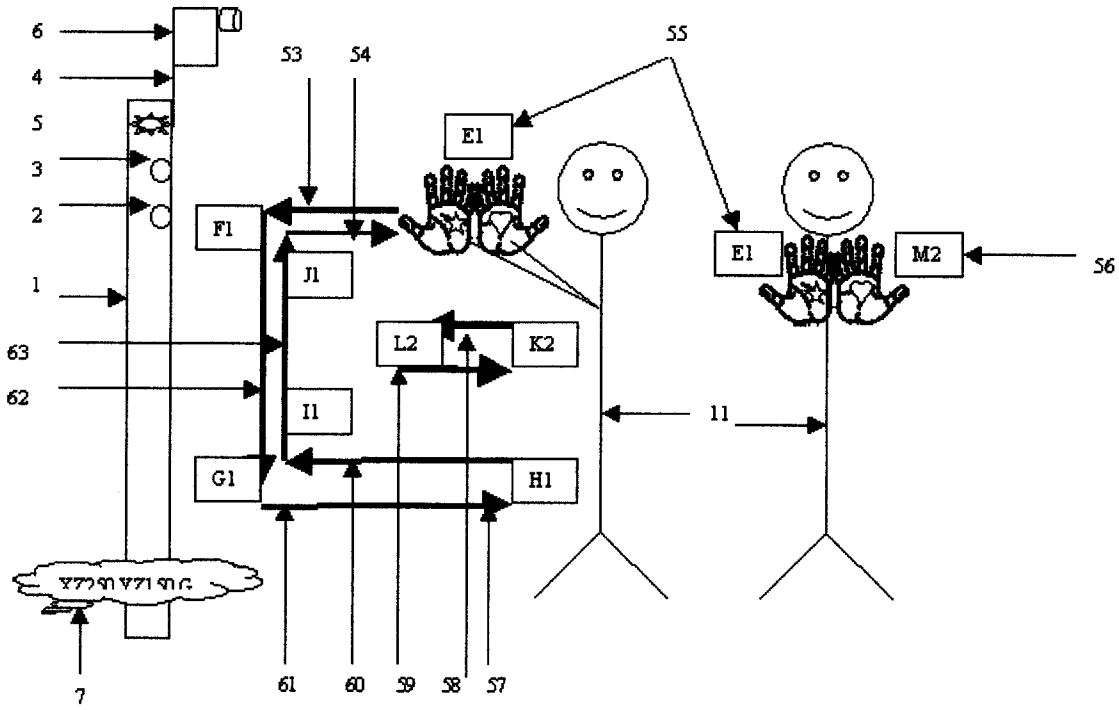
Fig. 5(A)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F1
J1
L2
K2
I1
G1
H1
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E1
M2
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Fig. 5(B)

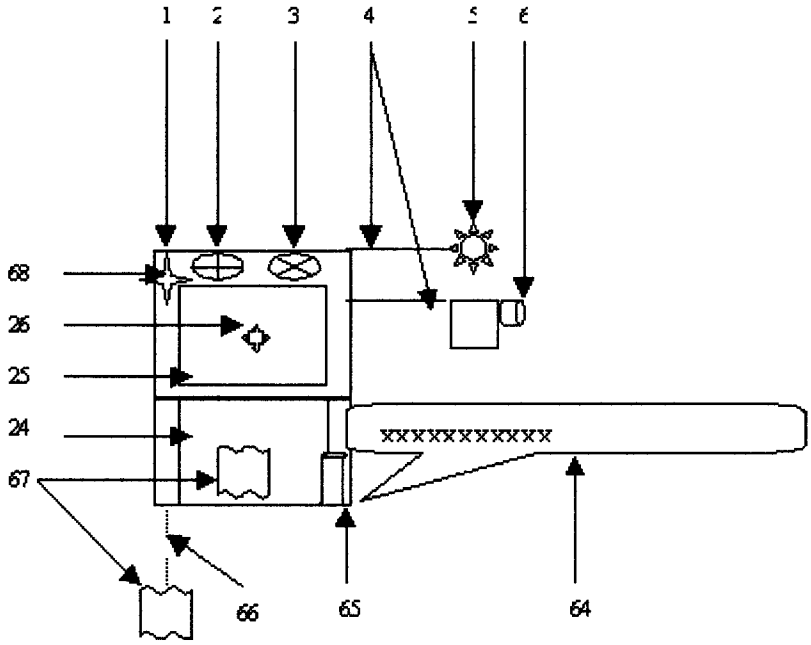

Fig. 6

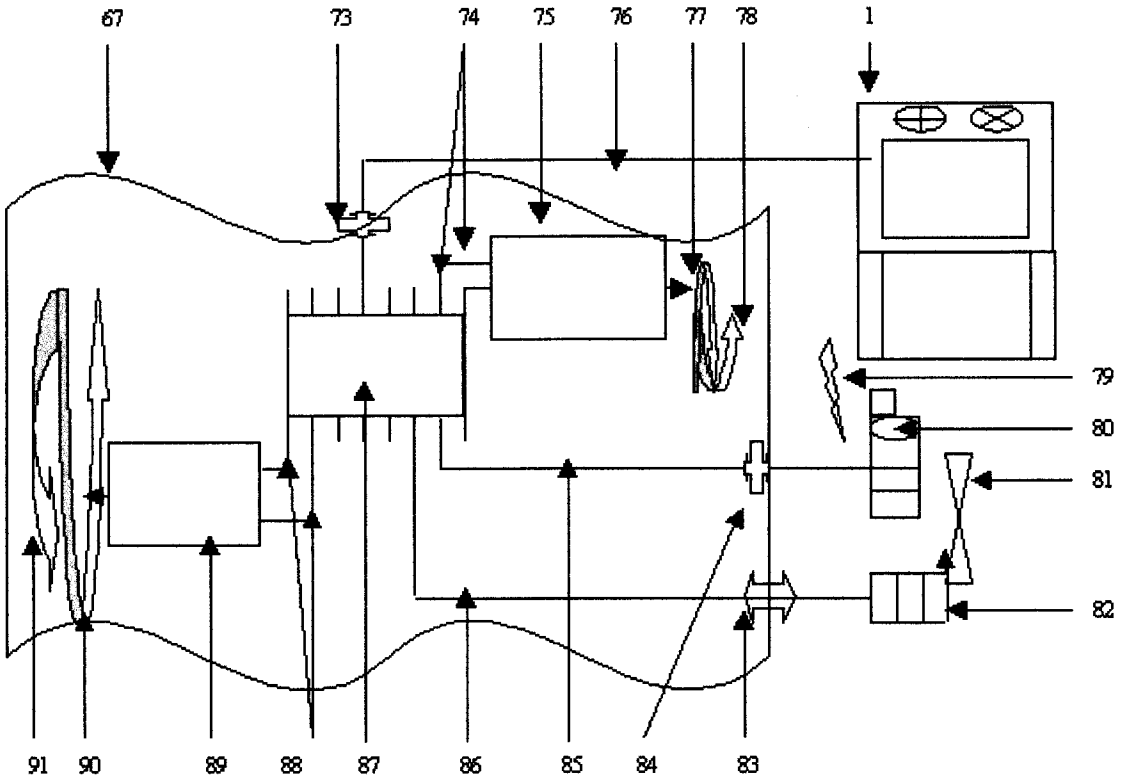

Fig. 7

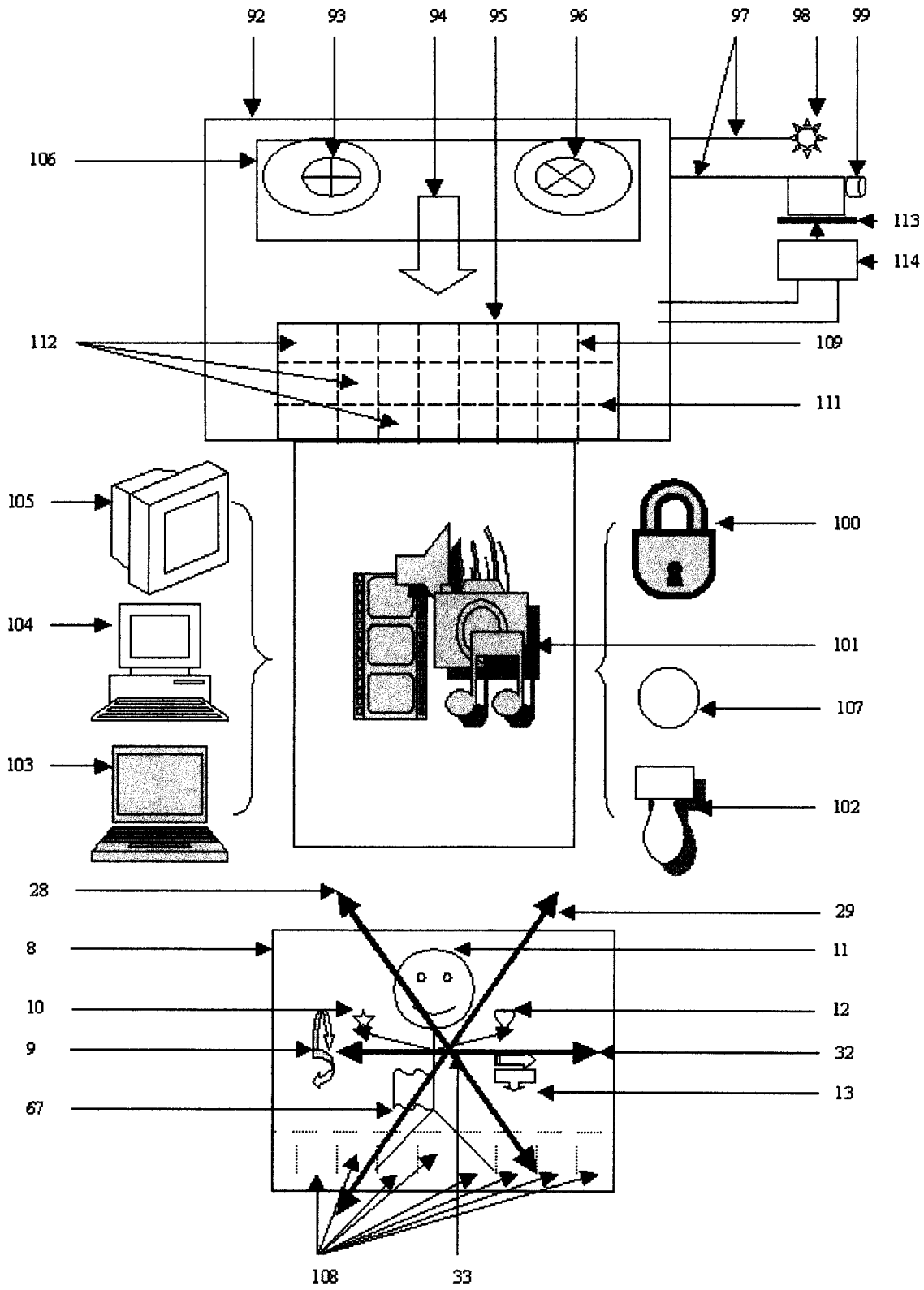
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FIG. 8

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CA2008/001256

A. CLASSIFICATION OF SUBJECT MATTER

IPC: ***G06F 3/00*** (2006.01) , ***B25J 9/00*** (2006.01) , ***B25J 9/18*** (2006.01) , ***G05B 15/02*** (2006.01) , ***G06F 15/18*** (2006.01) , ***G06F 3/03*** (2006.01) , ***G09B 21/00*** *(2006.01)* , ***H04N 7/18*** *(2006.01)*

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC: ***ALL*** (2006.01)

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

Electronic database(s) consulted during the international search (name of database(s) and, where practicable, search terms used)

Delphion & keywords: recognize gestures/actions/signs/activity; camera; virtual input/command; virtual/emulate/simulate keyboard/mouse; computer vision; perceptual interface; 3-D, 3d, three-dimensional; projected axes/axis/(work space)/ dimensions/(input guide)/array

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2006/0033713 A1 (*Pryor*) -16 February 2006 (16-02-2006) abstract; [0024]; [0030]; [0056]-[0057]; [0090]; [0220]; [0223]-[0224]; [0470]; [0514]; Fig. 1B	1
X	US 2004/0193413 A1 (*Wilson et al.*) - 30 September 2004 (30-09-2004) abstract; [0009]; [0011]-[0012]; [0059]-[0060]; [0167]; Figs, 2, 7, 8, 20, 21	1
X	US 7,129,927 B2 (*Mattsson*) - 31 October 2006 (31-10-2006) col. 3 lines 48, 49; col. 4 lines 44, 49, 50; col. 6 lines 58, 59; col. 7 lines 13, 14; col. 12 lines 42-44; Figs. 1-6	1
A	US 2003/0156756 A1 (*Gokturk et al.*) - 21 August 2003 (21-08-2003) abstract; [0008]-[0012]; [0041]-[0043]; [0048]; [0105]; [0115]-[0116]; [0119]	

[X] Further documents are listed in the continuation of Box

[X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
27 August 2008 (27-08-2007)	6 October 2008 (06-10-2008)

Name and mailing address of the ISA/CA	Authorized officer
Canadian Intellectual Property Office Place du Portage I, C114 - 1st Floor, Box PCT 50 Victoria Street Gatineau, Quebec K1A 0C9 Facsimile No.: 001-819-953-2476	Cristian S. Popa 819- 997-2299

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of the first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons :

1. [ ] Claim Nos. :
because they relate to subject matter not required to be searched by this Authority, namely :

2. [X] Claim Nos. : 2-60
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically :

the language of the description and the claims is so unclear due to being ungrammatical, unidiomatic and lacking in fluency that no meaningful opinion could be formed as to the possibility of the alleged invention being carried out by a person skilled in the pertinent art, or as to the support provided for the claims.

3. [ ] Claim Nos. :
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows :

1. [ ] As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. [ ] As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.

3. [ ] As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claim Nos. :

4. [ ] No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claim Nos. :

Remark on Protest

[ ] The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

[ ] The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

[ ] No protest accompanied the payment of additional search fees.

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant	Relevant to claim No.
A	WO 03/054683 A2 (*Bamji et al.*) 3 July 2003 (3-07-2003) abstract; page 7 lines 24-28; claim 45; Fig. 3C	
A	WO 03/071411 A1 (*Torunoglu et al.*) - 28 August 2003 (28-08-2003) abstract; [0004]-[0006]; [0009]; [0031]; [0043]; Fig. 1B item 203B; Fig. 1C item 203C	
A	US 2003/0004678 A1 (*Zhang et al.*) - 2 January 2003 (02-01-2003) abstract; [0016]-[0018]; [0033]; [0052]; Fig. 2 items 214, 216; Fig. 10	
A	US 7,058,204 B2 (*Hildreth et al.*) - 6 June 2006 (06-06-2006) abstract; col. 5 lines 39-50; claims 46-48, 58	
A	WO 2006/091753 A2 (*Su et al.*) - 31 August 2006 (31-08-2006) * the whole document *	

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CA2008/001256

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