CLAIMS

1. A computer program for preparing a moving program of a working robot which performs desired work by moving a holder holding a working apparatus and a workpiece relatively to each other, the program comprising:

a step of inputting movement information for the working apparatus, and

a step of automatically generating the moving program for the working apparatus based on said movement information,

wherein the step of inputting movement information comprises:

- a step of displaying a text entry screen on which movement information of the working apparatus can be input on ~~the~~ a character basis;
- a step of displaying a figure entry screen on which movement information of the working apparatus can be input as a path on a two-dimensional plane in correlation with height information;
- a step of outputting in real time the movement information of the working apparatus, which has been input on the text entry screen, as the path on the two-dimensional plane and the height information thereof on the figure entry screen;
- a step of outputting in real time the movement information of the working apparatus, which has been input on the figure entry screen, to the text entry screen on the character basis; and
- a step of displaying a 3D-display screen for outputting the movement information of the working apparatus, as a path on a three-dimensional space, on the basis of the movement information of

the working apparatus which has been input on the text entry screen and/or the figure entry screen; ~~and~~

- ~~automatically generating the input moving program for the working apparatus;~~

wherein

in work of inputting the movement information of the working apparatus on the text entry screen or the figure entry screen, the input movement information is displayed as the path on the three-dimensional space in real time on the 3D-display screen as soon as the information is input, and

the text entry screen and/or the figure entry screen and the 3D display screen are displayed at the same time.

2. The computer program according to Claim 1, further comprising a step of enabling the path on the three-dimensional space and a path, which is resulted from projecting the former path onto a two-dimensional plane, to be both simultaneously displayed on the 3D-display screen.

3. The computer program according to Claim 1 or 2, further comprising a step of enabling the three-dimensional space displayed on the 3D-display screen to be rotated.

~~4. The computer program according to Claim 1, 2 or 3, further comprising outputting in real time the movement information of the working apparatus, which has been input on the text entry screen and/or the figure entry screen, as the path on the three-dimensional space on the 3D-display screen.~~

~~5~~4. The computer program according to any one of Claims 1 to ~~4~~ 3, further comprising a step of displaying, on the figure entry screen, the height information of the working apparatus at two end points constituting one selected path in the forms of a scale axis indicating a height and a figure held in linkage with the scale axis.

~~6~~5. The computer program according to Claim ~~5~~4, further comprising a step of enabling the height information of the working apparatus to be changed by sliding the figure held in linkage with the scale axis.

~~7~~6. The computer program according to any one of Claims 1 to ~~6~~5, further comprising a step of displaying desired image data as a background on the figure entry screen, and enabling the movement information of the working apparatus to be input on the displayed background.

~~8~~7. Data medium holding a computer program according to any of the preceding claims.

~~9~~8. An apparatus comprising a storage unit storing the computer program according to any one of Claims 1 to ~~7~~6, a display unit, an input unit, an information processing unit, and a data communication unit for transferring a prepared moving program to a working robot.

~~10~~9. The apparatus according to claim ~~9~~8, wherein the apparatus is a computer system.

~~11~~10. A device, comprising a storage unit storing a program for preparing a moving program of a working robot which performs desired work by moving a holder holding a working apparatus and a workpiece relatively to each other, a display unit, an input unit, an information processing unit, and a data communication unit for transferring a prepared moving program to a working robot,

characterized by comprising

- means for inputting movement information for the working apparatus;
- means for displaying a text entry screen on which movement information of the working apparatus can be input on the character basis;
- means for displaying a figure entry screen on which movement information of the working apparatus can be input as a path on a two-dimensional plane in correlation with height information;
- means for outputting in real time the movement information of the working apparatus, which has been input on the text entry screen, as the path on the two-dimensional plane and the height information thereof on the figure entry screen;
- means for outputting in real time the movement information of the working apparatus, which has been input on the figure entry screen, to the text entry screen on the character basis;
- means for displaying a 3D-display screen for outputting the movement information of the working apparatus, as a path on a three-dimensional space, on the basis of the movement information of the working apparatus which has been input on the text entry screen and/or the figure entry screen; and

- means for automatically generating the ~~input~~ moving program for the working apparatus based on said movement information;

wherein

in work of inputting the movement information of the working apparatus on the text entry screen or the figure entry screen, the input movement information is displayed as the path on the three-dimensional space in real time on the 3D-display screen as soon as the information is input, and

the text entry screen and/or the figure entry screen and the 3D display screen are displayed at the same time.

~~12~~11. A method for making a moving program of a working robot which performs desired work by moving a holder holding a working apparatus and a workpiece relatively to each other, the moving program executed on a device comprising a storage unit storing a program for preparing the moving program, a display unit, an input unit, an information processing unit, and a data communication unit for transferring a newly prepared moving program to the working robot, the method comprising:

a step of inputting movement information for the working apparatus, and

a step of automatically generating the moving program for the working apparatus based on said movement information,

wherein the step of inputting movement information comprises:

- a step of displaying a text entry screen on which movement information of the working apparatus can be input on ~~the~~ a character basis;

- a step of displaying a figure entry screen on which movement information of the working apparatus can be input as a path on a two-dimensional plane in correlation with height information;
- a step of outputting in real time the movement information of the working apparatus, which has been input on the text entry screen, as the path on the two-dimensional plane and the height information thereof on the figure entry screen;
- a step of outputting in real time the movement information of the working apparatus, which has been input on the figure entry screen, to the text entry screen on the character basis; and
- a step of displaying a 3D-display screen for outputting the movement information of the working apparatus, as a path on a three-dimensional space, on the basis of the movement information of the working apparatus which has been input on the text entry screen and/or the figure entry screen; ~~and~~
- ~~automatically generating the input moving program for the working apparatus;~~

wherein

in work of inputting the movement information of the working apparatus on the text entry screen or the figure entry screen, the input movement information is displayed as the path on the three-dimensional space in real time on the 3D-display screen as soon as the information is input, and

the text entry screen and/or the figure entry screen and the 3D display screen are displayed at the same time.

~~13~~12. The method according to Claim ~~12~~11, further comprising a step of enabling the path on the three-dimensional space and a path, which is resulted from projecting the former path onto a two-dimensional plane, to be both simultaneously displayed on the 3D-display screen.

~~14~~13. The method according to Claim ~~12~~11 or ~~13~~12, further comprising a step of enabling the three-dimensional space displayed on the 3D-display screen to be rotated.

~~15. The method according to Claim 12, 13 or 14, further comprising outputting in real time the movement information of the working apparatus, which has been input on the text entry screen and/or the figure entry screen, as the path on the three-dimensional space on the 3D-display screen.~~

~~16~~14. The method according to any one of Claims ~~12~~11 to ~~15~~13, further comprising a step of displaying, on the figure entry screen, the height information of the working apparatus at two end points constituting one selected path in the forms of a scale axis indicating a height and a figure held in linkage with the scale axis.

~~17~~15. The method according to Claim ~~16~~14, further comprising a step of enabling the height information of the working apparatus to be changed by sliding the figure held in linkage with the scale axis.

~~18~~16. The method according to any one of Claims ~~12~~11 to ~~17~~15, further comprising a step of displaying desired image data as a background on

the figure entry screen, and enabling the movement information of the working apparatus to be input on the displayed background.

~~19~~17. A computer-implemented method for making a moving program of working robot which performs desired work by moving a holder holding a working apparatus and a workpiece relatively to each other, the moving program executed on a device comprising a storage unit storing a program for preparing the moving program , a display unit, an input unit, an information processing unit, and a data communication unit for transferring a newly prepared moving program to the working robot, the method comprising:

a step of inputting movement information for the working apparatus, and

a step of automatically generating the moving program for the working apparatus based on said movement information,

wherein the step of inputting movement information comprises:

- a step of displaying a text entry screen on which movement information of the working apparatus can be input on ~~the~~ a character basis;
- a step of displaying a figure entry screen on which movement information of the working apparatus can be input as a path on a two-dimensional plane in correlation with height information;
- a step of outputting in real time the movement information of the working apparatus, which has been input on the text entry screen, as the path on the two-dimensional plane and the height information thereof on the figure entry screen;

- a step of outputting in real time the movement information of the working apparatus, which has been input on the figure entry screen, to the text entry screen on the character basis; and
- a step of displaying a 3D-display screen for outputting the movement information of the working apparatus, as a path on a three-dimensional space, on the basis of the movement information of the working apparatus which has been input on the text entry screen and/or the figure entry screen; ~~and~~
- ~~automatically generating the input moving program for the working apparatus;~~

wherein

in work of inputting the movement information of the working apparatus on the text entry screen or the figure entry screen, the input movement information is displayed as the path on the three-dimensional space in real time on the 3D-display screen as soon as the information is input, and

the text entry screen and/or the figure entry screen and the 3D display screen are displayed at the same time.

~~20~~18. The method according to Claim ~~19~~17, further comprising a step of enabling the path on the three-dimensional space and a path, which is resulted from projecting the former path onto a two-dimensional plane, to be both simultaneously displayed on the 3D-display screen.

~~21~~19. The method according to Claim ~~19~~17 or ~~20~~18, further comprising a step of enabling the three-dimensional space displayed on the 3D-display screen to be rotated.

~~22. The method according to Claim 19, 20 or 21, further comprising outputting in real time the movement information of the working apparatus, which has been input on the text entry screen and/or the figure entry screen, as the path on the three-dimensional space on the 3D-display screen.~~

~~23~~20. The method according to any one of Claims ~~19~~17 to ~~22~~19, further comprising a step of displaying, on the figure entry screen, the height information of the working apparatus at two end points constituting one selected path in the forms of a scale axis indicating a height and a figure held in linkage with the scale axis.

~~24~~21. The method according to Claim ~~23~~20, further comprising a step of enabling the height information of the working apparatus to be changed by sliding the figure held in linkage with the scale axis.

~~25~~22. The method according to any one of Claims ~~19~~17 to ~~24~~21, further comprising a step of displaying desired image data as a background on the figure entry screen, and enabling the movement information of the working apparatus to be input on the displayed background.