CLAIMS

1. A video-conference terminal device comprising:

a wide-angle camera comprising a wide-angle camera lens;

a first control unit that receives a digital video signal from the wide-angle camera and performs distortion correction processing on an image included in the digital video signal;

a storage unit that stores therein image correction information used when the first control unit performs the image distortion correction processing, the image correction information comprising correction information for the distortion correction processing regarding at least a partial area of the image included in the digital video signal from the wide-angle camera;

a second control unit that transmits and receives a signal to and from another video-conference terminal device coupled to a network;

a providing unit that provides the digital video signal of the wide-angle camera and a digital video signal on which the distortion correction has been performed; and

an operating unit that outputs a signal to switch pieces of the image correction information stored in the storage unit every time being operated, wherein

the first control unit performs distortion correction processing on the image included in the digital video signal using a piece of the image correction information that has been selected by switching through the operating unit,

wherein the image correction information further comprises correction information representing a relation that specifies a subject on which the distortion correction processing is to be performed under a predetermined

condition.

2. The video-conference terminal device according to claim 1, wherein the partial area of the image included in the digital video signal from the wide-angle camera comprises at least one or a combination of two or more selected from almost the whole, an almost center portion, an almost right side portion, and an almost left side portion of the image included in the digital video signal from the wide-angle camera.

3. The video-conference terminal device according to claim 1 or 2, further comprising an information display unit that is provided from the providing unit with and displays the digital video signal of the wide-angle camera and the digital video signal on which the distortion correction has been performed.

4. The video-conference terminal device according to claim 3, further comprising:

an information display slant detection unit, wherein

when the information display slant detection unit outputs an information display slant signal, the storage unit selects a piece of the image correction information corresponding to the information display slant signal out of the image correction information stored in the storage unit, and

the first control unit determines the selected piece of the image correction information as a subject to be used when the distortion correction processing is performed on the image included in the digital video signal from the wide-angle camera.

5. The video-conference terminal device according to any one of claims 1 to 4, further comprising:

a camera direction detection unit that detects a capturing direction of the wide-angle camera, wherein

when the camera direction detection unit outputs a camera direction signal, the storage unit selects a piece of the image correction information corresponding to the camera direction signal out of the image correction information stored in the storage unit, and

the first control unit determines the selected piece of the image correction information as a subject to be used when the distortion correction processing is performed on the image included in the digital video signal from the wide-angle camera.

~~6. The video-conference terminal device according to any one of claims 1 to 5, wherein the image correction information further comprises correction information representing a relation that specifies a subject on which the distortion correction processing is to be performed under a predetermined condition.~~

~~7~~6. A video-conference system comprising:

at least two video-conference terminal device according to any one of claims 1 to ~~6~~5; and

a video-conference server that controls a video-conference held between the at least two video-conference terminal devices, wherein

the video-conference terminal devices and the video-conference server are coupled to each other through a network.

7. A video-conference terminal device comprising:

a wide-angle camera comprising a wide-angle camera lens;

a first control unit that receives a digital video signal from the wide-angle camera and performs distortion correction processing on an image included in the digital video signal;

a storage unit that stores therein image ccrrection information used when the first control unit performs the image distortion correction processing, the image correction information comprising correction information for the distortion correction processing regarding at least a partial area of the image included in the digital video signal from the wide-angle camera;

a second control unit that transmits and receives a signal to and from another video-conference terminal device coupled to a network;

a providing unit that provides the digital video signal of the wide-angle camera and a digital video signal on which the distortion correction has been performed;

an operating unit that outputs a signal to switch pieces of the image correction information stored in the storage unit every time being operated, wherein

the first control unit performs distortion correction processing on the image included in the digital video signal using a piece of the image correction information that has been selected by switching through the operating unit;

an information display unit that is provided from the providing unit with and displays the digital video signal of the wide-angle camera and the digital video signal on which the distortion correction has been performed; and

an information display slant detection unit, wherein

when the information display slant detection unit

outputs an information display slant signal, the storage unit selects a piece of the image correction information corresponding to the information display slant signal out of the image correction information stored in the storage unit, and

the first control unit determines the selected piece of the image correction information as a subject to be used when the distortion correction processing is performed on the image included in the digital video signal from the wide-angle camera.

8. The video-conference terminal device according to claim 7, wherein the partial area of the image included in the digital video signal from the wide-angle camera comprises at least one or a combination of two or more selected from almost the whole, an almost center portion, an almost right side portion, and an almost left side portion of the image included in the digital video signal from the wide-angle camera.

9. The video-conference terminal device according to claim 7 or 8, further comprising:

a camera direction detection unit that detects a capturing direction of the wide-angle camera, wherein

when the camera direction detection unit outputs a camera direction signal, the storage unit selects a piece of the image correction information corresponding to the camera direction signal out of the image correction information stored in the storage unit, and

the first control unit determines the selected piece of the image correction information as a subject to be used when the distortion correction processing is performed on the image included in the digital video signal from the

wide-angle camera.

10. A video-conference system comprising:

at least two video-conference terminal device according to any one of claims 7 to 9; and

a video-conference server that controls a video-conference held between the at least two video-conference terminal devices, wherein

the video-conference terminal devices and the video-conference server are coupled to each other through a network.

11. A video-conference terminal device comprising:

a wide-angle camera comprising a wide-angle camera lens;

a first control unit that receives a digital video signal from the wide-angle camera and performs distortion correction processing on an image included in the digital video signal;

a storage unit that stores therein image correction information used when the first control unit performs the image distortion correction processing, the image correction information comprising correction information for the distortion correction processing regarding at least a partial area of the image included in the digital video signal from the wide-angle camera;

a second control unit that transmits and receives a signal to and from another video-conference terminal device coupled to a network;

a providing unit that provides the digital video signal of the wide-angle camera and a digital video signal on which the distortion correction has been performed;

an operating unit that outputs a signal to switch

pieces of the image correction information stored in the storage unit every time being operated, wherein

the first control unit performs distortion correction processing on the image included in the digital video signal using a piece of the image correction information that has been selected by switching through the operating unit; and

a camera direction detection unit that detects a capturing direction of the wide-angle camera, wherein

when the camera direction detection unit outputs a camera direction signal, the storage unit selects a piece of the image correction information corresponding to the camera direction signal out of the image correction information stored in the storage unit, and

the first control unit determines the selected piece of the image correction information as a subject to be used when the distortion correction processing is performed on the image included in the digital video signal from the wide-angle camera.

12. The video-conference terminal device according to claim 11, wherein the partial area of the image included in the digital video signal from the wide-angle camera comprises at least one or a combination of two or more selected from almost the whole, an almost center portion, an almost right side portion, and an almost left side portion of the image included in the digital video signal from the wide-angle camera.

13. A video-conference system comprising:

at least two video-conference terminal device according to claim 11 or 12; and

a video-conference server that controls a video-

conference held between the at least two video-conference terminal devices, wherein

the video-conference terminal devices and the video-conference server are coupled to each other through a network.

~~8~~14. An image distortion correction method comprising:

a step of capturing a digital video signal through a wide-angle camera comprising a wide-angle camera lens;

a step of clipping at least one area from an image included in the digital video signal captured at the step of capturing the digital video signal;

a step of switching pieces of image correction information for distortion correction processing on the clipped area, to select an intended area from the area clipped at the step of clipping at least one area;

a step of performing the distortion correction processing on the image of the selected intended area by applying a piece of the image correction information selected at the step of switching pieces of the image correction information to the selected intended area;~~ and~~

a step of providing an information display unit with an image of the area corrected at the step of performing the distortion correction processing~~.~~

~~9. The image distortion correction method according to claim 8, comprising:~~; and

a step of detecting at least one of an angle of elevation of the wide-angle camera and a capturing direction of the wide-angle camera, wherein

the image correction information comprises pieces of the image correction information including information on at least one of the angle of elevation of the wide-angle

camera and the capturing direction of the wide-angle camera,

when the at least one of the angle of elevation of the wide-angle camera and the capturing direction of the wide-angle camera is detected at the step of detecting at least one of the angle of elevation of the wide-angle camera and the capturing direction of the wide-angle camera, only the pieces of the image correction information including the information on the at least one of the angle of elevation of the wide-angle camera and the capturing direction of the wide-angle camera are determined as a subject to be switched at the step of switching the image correction information.

~~10~~15. A computer program product comprising a non-transitory computer-usable medium having computer-readable program codes embodied in the medium, wherein the program codes when executed cause a computer to execute:

a step of capturing a digital video signal through a wide-angle camera comprising a wide-angle camera lens;

a step of clipping at least one area from an image included in the digital video signal captured at the step of capturing the digital video signal;

a step of switching pieces of image correction information for distortion correction processing on the clipped area, to select an intended area from the area clipped at the step of clipping at least one area;

a step of performing the distortion correction processing on the image of the selected intended area by applying a piece of the image correction information selected at the step of switching pieces of the image correction information to the selected intended area; ~~and~~

a step of providing an information display unit with an image of the area corrected at the step of performing

the distortion correction processing; and

a step of detecting at least one of an angle of elevation of the wide-angle camera and a capturing direction of the wide-angle camera, wherein

the image correction information comprises pieces of the image correction information including information on at least one of the angle of elevation of the wide-angle camera and the capturing direction of the wide-angle camera,

when the at least one of the angle of elevation of the wide-angle camera and the capturing direction of the wide-angle camera is detected at the step of detecting at least one of the angle of elevation of the wide-angle camera and the capturing direction of the wide-angle camera, only the pieces of the image correction information including the information on the at least one of the angle of elevation of the wide-angle camera and the capturing direction of the wide-angle camera are determined as a subject to be switched at the step of switching the image correction information.