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問 1

[Claim 1]

An optical sensor, comprising:

a light-emitting part that externally emits, on the basis of a pulse signal, pulse light;

a light-receiving part that generates a photo-electric current corresponding to an intensity of externally incident light;

a current-voltage conversion circuit that converts the photo-electric current into a voltage signal;

a high-pass filter that extracts, from the voltage signal, an AC component having at least a predetermined frequency and outputs the extracted AC component as filtered output indicating a signal waveform around a reference voltage;

a polarity inverting amplifier, in which on the basis of the pulse signal, a non-inverting amplifier state and an inverting amplifier state are switched, which outputs the filtered output in the non-inverting amplifier state, where the filter output is not inverted, and which outputs the filter output in the inverting amplifier state, where the filtered output is inverted relative to the reference voltage; and

an integrator that integrates, on the basis of the reference voltage, the output of the polarity inverting amplifier.

[Claim 2]

The optical sensor according to claim 1, further comprising a delay circuit that delays the pulse signal to be outputted to the polarity inverting amplifier.

問 2

A game system is known which generates an image seen from a given viewpoint in an object space which is a virtual three-dimensional space, and such a game system is popular because a user is capable of experiencing a so-called virtual reality. For example, in a role-playing game, a player operates a character (object) allowing for movement on a map in an object space. The player enjoys the game when the character is made to fight with an enemy character, to talk with another character, and to visit various towns, for example.

In such a game system, an object that represents a character and the like is usually configured by a plurality of polygons. The object configured by the polygons is

arranged in an object space. When a so-called geometry process is applied, an image seen from a virtual camera is generated. As a result, even when the object is viewed from various directions by the virtual camera, it is possible to generate a consistent game image.

There is, however, a problem that although thus-generated game image is a mathematically correct image, a player is somewhat not emotionally attracted. For example, when a character appearing in an animation film, a comic book or the like is expressed by an object, if shading is applied to the object by Gouraud shading, for example, then it is possible to obtain a real image; however, an image is generated which exhibits a different look and feel from a viewer is used to from the animation film, the comic book, or the like.

問 3

As illustrated in Fig. 4, when a motion sensor 25 installed together with a lighting equipment 20 at an outdoor side of an entrance door senses a human body 30, a lighting lamp of the lighting equipment 20 is first lit up. When the lighting lamp of the lighting equipment 20 is lit up, a current flowing through the lighting equipment 20 is detected by a current detection circuit 14 (Fig. 3).

A control unit 200 lights up a lighting lamp of a lighting equipment 10, triggered by a current detection signal output from the current detection circuit 14, for example, on the basis of previously set setting condition information, after an elapse of a predetermined light-up interval time period since the lighting lamp of the lighting equipment 20 is lit up. As a result, when the lighting system 100 is used, if the human body 30 is a suspicious person, for example, then it is possible to create a make-believe situation where there is an occupant indoors, and thus, it is possible to use the system 100 for preventing a crime or the like.

A controller 15 controls an LED circuit 17, for example, to light up an LED so as to inform a lighting state of the lighting lamp of the lighting equipment 20, in response to a current detection signal from the current detection circuit 14, and also brings a switch part 19 into an ON state after an elapse of a previously set light-up interval time period t1 since the lighting lamp of the lighting equipment 20 is lit up. When the switch part 19 is brought into the ON state, a current flows through an electric lamp line at the lighting equipment 10 side, and the lighting lamp of the lighting equipment 10 is lit up, resulting in a lit-up state.