indicates that the subject concentrates. Moreover, in the case where the subject alternately sees a reference book and a notebook in learning, the information processing apparatus in the related art calculates a low concentration level although the situation indicates that the subject concentrates on learning. Thus, the information processing apparatus in the related art has a problem of low accuracy in calculation of the concentration level.

[0005]

Accordingly, embodiments of the present disclosure provide a concentration level calculation system and a concentration level calculation method which can calculate a concentration level with higher accuracy.

[Solution to Problem]

[0006]

According to a first aspect of the present disclosure, there is provided a concentration level calculation system including: an image obtainer which obtains an image stream in which images of a subject are captured; a region obtainer which obtains concentration target regions each corresponding to a different one of concentration target objects to be watched by the subject; and a concentration level calculator which calculates a concentration level of the subject. Here, the concentration level calculator calculates an orientation of a face or line of sight of the subject from the image stream obtained; determines, based on the orientation of the face or line of sight of the subject calculated and the concentration target regions obtained, whether the subject in a watching state where the subject is watching any one of the concentration target objects; and calculates the concentration level of the subject based on a result of the determination, and outputs the concentration level.

[0007]

According to a second aspect of the present disclosure, there is provided a concentration level calculation method including: obtaining an image stream in which images of a subject are captured; obtaining concentration target regions each corresponding to a different one of concentration target objects to be watched by the subject; calculating an orientation of a face or line of sight of the subject from the image stream obtained; determining, based on the orientation of the face or line of sight of the subject calculated and the concentration target regions obtained, whether the subject is in a watching state where the subject is watching any one of the concentration target objects; and calculating a concentration level of the subject based on a result of the determination, and outputting the concentration level.

[0008]

According to a third aspect of the present disclosure, there is provided a program for causing a computer to execute the above method. Alternatively, a concentration level calculation method

according to an embodiment of the present disclosure can be implemented as a computer-readable recording medium having recorded thereon the program for causing a computer to execute the above method.

[0008a]

According to a fourth aspect of the present disclosure, there is provided a concentration level calculation system including: an image obtainer which obtains an image stream in which images of a subject are captured; a region obtainer which obtains concentration target regions each corresponding to a different one of concentration target objects to be watched by the subject; and a concentration level calculator which calculates a concentration level of the subject, wherein the concentration level calculator calculates the concentration level of the subject by inputting the image stream and the concentration target regions to a concentration level calculation model trained by machine learning of a correlation among the image stream, the concentration target regions, and the concentration level of the subject.

[0008b]

According to a fifth aspect of the present disclosure, there is provided a concentration level calculation model generation system including: a model generator which generates the above concentration level calculation model.

[Advantageous Effects of Invention]

[0009]

Embodiments of the present disclosure can calculate the concentration level with higher accuracy.

[Brief Description of Drawings]

[0010]

[FIG. 1]

FIG. 1 is a diagram illustrating a usage example of the concentration level calculation system according to an embodiment.

[FIG. 2]

FIG. 2 is a block diagram illustrating the configuration of the concentration level calculation system according to the embodiment.

[FIG. 3]

FIG. 3 is a diagram for illustrating the concentration target region according to the embodiment.

[FIG. 4]

FIG. 4 is a flowchart illustrating the concentration level calculation method according to an embodiment.

[FIG. 5]

FIG. 5 is a diagram for illustrating determination of the watching state according to the embodiment.