examination) in the form of face-to-face interview has been used for diagnosis of cognitive impairment and dementia. The cognitive functioning test is a method in which an examiner asks a subject some questions for assessing the cognitive function, scores the answers to the questions that are given orally or in the form of writing of characters and drawing of graphics, and calculates a cognitive function score. This method has a problem, however, that the test is time consuming. For example, even the simplest mini-mental state exam (MMSE) takes about 15 to 30 minutes. The method also has a problem that a subject experiences a significant psychological stress due to the nature of the test that is conducted in the form of face-to-face interview. Another problem is that scores largely vary depending on the difference in the skills of interviewing examiners and their interpretation of the answers to the questions.

[0013]

To solve the foregoing problems, the present inventors propose the cognitive impairment diagnostic device of PTL 13. A new cognitive impairment diagnostic device is further awaited.

[0014]

Embodiments of the present invention provide a cognitive impairment diagnostic device and a cognitive impairment diagnostic program that achieve a simple, low-cost, objective, quantitative, and versatile diagnosis of cognitive impairment, using a new diagnostic method.

[Solution to Problem]

[0015]

According to a first aspect of the present invention, there is provided a cognitive impairment diagnostic device including: an obtainer that obtains a distribution map representing a distribution of gaze points of a subject on a movie for cognitive assessment; and a diagnoser that makes diagnosis of cognitive impairment, based on the distribution map. Here, the movie for cognitive assessment includes, in time order: a first movie including (i) a first region that includes an image for encoding that is displayed in a visually enhanced manner, and (ii) a plurality of second regions that include normal images that are displayed without being enhanced; and an assessment movie including (iii) a third region that includes an assessment image that is similar to the image for encoding and displayed at a same position as the image for encoding without being visually enhanced, and (iv) the plurality of second regions. The diagnoser: calculates, in a distribution map on the assessment movie, a percentage of fixation duration for which the third region is focused on; and makes diagnosis of suspected memory impairment when the percentage of fixation duration is lower than a threshold.

[0015a]

According to a second aspect of the present invention, there is provided a cognitive impairment diagnostic device including: an obtainer that obtains a distribution map representing a distribution of gaze points of a subject on a movie for cognitive assessment; and a diagnoser that makes diagnosis of cognitive impairment, based on the distribution map, wherein the movie for cognitive assessment includes: a first region including a correct image for cognitive assessment or an image for encoding; and a plurality of second regions including other images, and the diagnoser: calculates, in the distribution map on the movie for cognitive assessment, a percentage of fixation duration for which the first region is focused on or a percentage of fixation duration for which at least one of the plurality of second regions is focused on; and makes diagnosis of whether cognitive impairment is present by comparing the percentage of fixation duration with a threshold.

[0016]

According to a third aspect of the present invention, there is provided a cognitive impairment diagnostic program executed by a computer that obtains a distribution map representing a distribution of gaze points of a subject on a movie for cognitive assessment, and makes diagnosis of cognitive impairment, based on the distribution map. Here, the movie for cognitive assessment includes, in time order: a first movie including (i) a first region that includes an image for encoding that is displayed in a visually enhanced manner, and (ii) a plurality of second regions that include normal images that are displayed without being enhanced; and an assessment movie including (iii) a third region that includes an assessment image that is similar to the image for encoding and displayed at a same position as the image for encoding without being visually enhanced, and (iv) the plurality of second regions. The cognitive impairment diagnostic program causes the computer to execute: calculating, in a distribution map on the assessment movie, a percentage of fixation duration for which the third region is focused on; and making diagnosis of suspected memory impairment when the percentage of fixation duration is lower than a threshold.

[Advantageous Effects of Invention]

[0017]

The cognitive impairment diagnostic device and the cognitive impairment diagnostic program according to embodiments of the present invention achieve a simple, low-cost, objective, quantitative, and versatile diagnosis of cognitive impairment.

[Brief Description of Drawings]