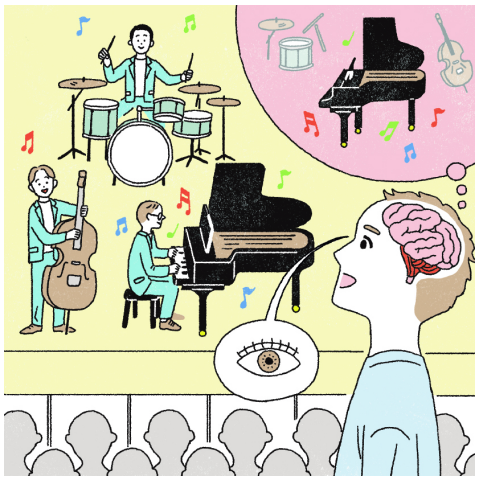
F09

Visualizing various states of cognitive processing in the brain on the basis of eye movements

Reading minds through the eye information

IOWN Future

Medical, Healthcare, and Human-Augmentation Technologies to Empower People



Background

Capturing a person's attention state (e.g., arousal level) and using such information promote understanding our mind and improving our quality of life. Although capturing the attention state objectively is difficult, it is becoming possible that it can be read from eye information.

Summary

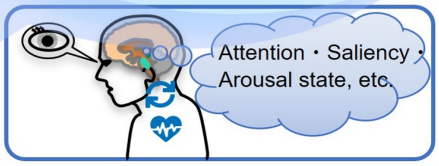
Conventional studies focused on the explicit gaze for estimating attention. The present study instead used implicit features such as pupillary responses, microsaccades, and blinks. Further understanding of mechanisms gives us the insight to select proper feat ures for estimating attention.

Understanding the relationship between human cognitive functions and the eye through a loop of exploration and investigation and practical application based on the underlying mechanism

Exploration of research topics in real-world environments

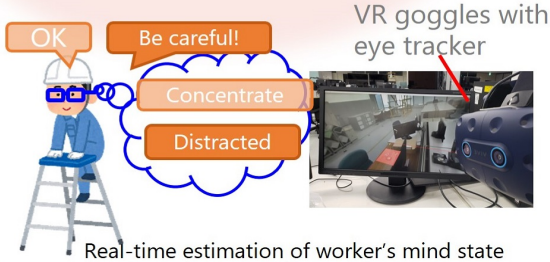
- Blink patterns of car racer
- Eye measurements in real-world environments

Sophisticated experiments in laboratories



- Reading minds by pupillary responses and eye movements
- Elucidation of physiological mechanisms

Research for practical applications



Real-time estimation of worker's mind state

Features

- Pupillary responses reflect the brightness of the place where auditory attention is directed even when visual input is consta
- Blink patterns during formula car races are related to the driver's cognitive state, which pioneered a new approach for mind-reading methods in real-world environments
- Temporal fluctuations in pupil diameter correlate with the reaction time of a cognitive task, and proposed a method for reading the alertness level using VR goggles

Future_benefits

The information presentation technology using eye movements may provide new entertainment, such as determining the stage production in accordance with the viewers' cognitive state.

Exhibiting Company

NIPPON TELEGRAPH AND TELEPHONE CORPORATION

Contact

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