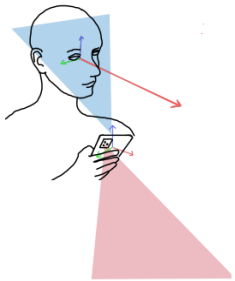
Tohoku Univ. Technology

Eye gaze input device

Realizing highly accurate eye gaze input by smart phone



User's eye gaze tracking

Front camera

Head direction tracking

Understanding the user's surrounding environment

Back camera
Depth sensor

3D map recovery & Self-positioning

Allows eye gaze input to the surrounding environment

Overview

This invention is related to the eye gaze detection and eye gaze input device.

In conventional eye gaze detection and eye gaze input device, the device needs to be installed in the environment or mounted on a wearable device. However, those devices have certain limitation, such as the position range where the function can be used for the former, while the latter requires the user to wear the device.

This invention uses only a smartphone, and **it is possible to run the function of eye gaze detection and eye gaze input with 6 degrees of freedom regardless of the user's standing position or the environment area if the user holds the smartphone naturally [1]**.

In detail, the system estimates where the user is looking in the environment by combining the user's gaze direction detection using the smartphone's front camera and self-position estimation using the back camera/depth sensor and 3D map of the environment (acquired in advance).

Related Works

[1] NAGAI Takahiro, FUJITA Kazuyuki, TAKASHIMA Kazuki, KITAMURA Yoshifumi. A study of eye gaze input interface to the surrounding environment using only a smart phone. Human interface society research report collection. June 2021.

IP Data

IP No.	:	-
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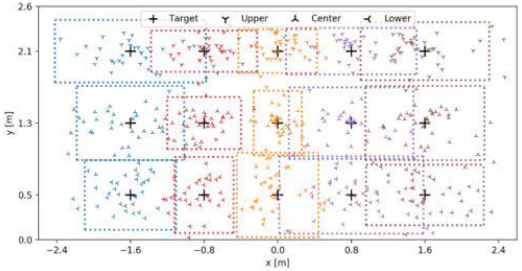
Admin No.	:	T21-047

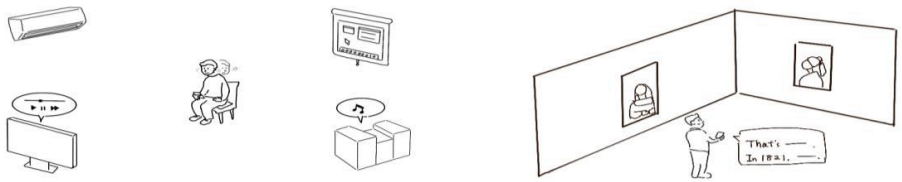
59% less error than conventional technology*

*Conventional technology: Sven Mayer et.al.(2020)



Product Application

- Identify the target of interest by detecting the user's eye gaze in store, museum, etc. (useful data for marketing)
- Eye gaze input interface (smart home electronics, etc.)



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