

# Eye Gaze Tracking

## Eye Gaze Tracking by detecting Eye Corneal Reflections

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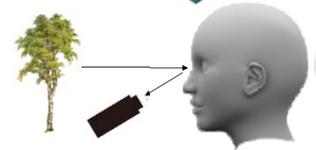
### 1. Introduction

The systems for estimating the “Where you are looking at” has been extensively required in the various fields i.e. market researches, medical diagnosis, automobile industries.

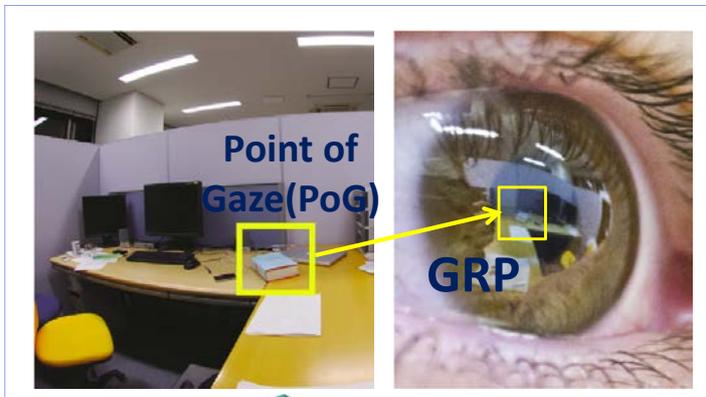
The commonly-used method called a PCCR (Pupil Center Cornea Reflection) has fatal disadvantages of the possible calibration problems.

Our new invention, which uses a geometric model of the eyeball for the estimation of the point of gaze (PoG) by detecting the pupil contour, solves calibration problems of PCCR method.

To use the image that reflecting on the surface of the eye

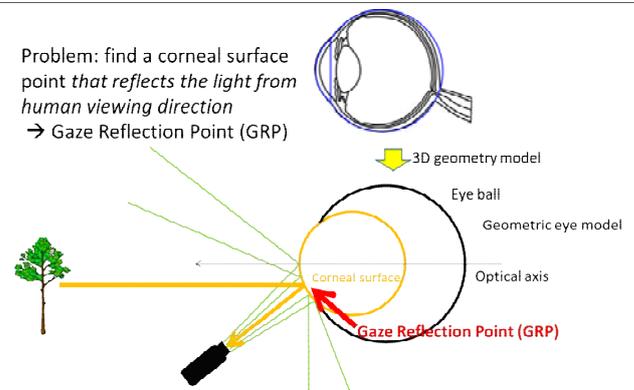


### 2. The outline of our Invention



The PoG is determined by the gaze reflection point (GRP) in the eye corneal reflection

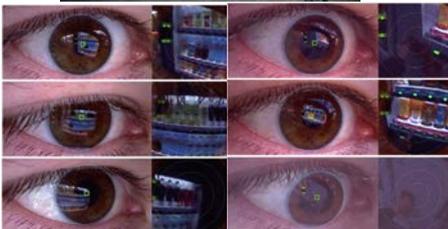
Problem: find a corneal surface point that reflects the light from human viewing direction  
→ Gaze Reflection Point (GRP)



1. To detect a pupil contour based on the geometric model of the eyeball
2. To determine the three-dimensional position of the eye with a pupil profile
3. The PoG can be determined by using the 3-dimensional orientation of the GRP on eyeball surface.

### 3. Application Example (Market Researches)

Vending Machines  
(customers behavior analysis)



Retail Shops  
(purchase behavior analysis)



The valuable/useful marketing information can be obtained by processing the recorded data of PoG's movements/trajectories.

### 4. Prospective Applications

1. Medical Diagnosis i.e. for developmental disorder
2. Supporting Systems for automatic operations i.e. machineries, automobiles
3. Entertainment & Amusement i.e. arcade games, simulation games

### 5. Patent Licensing Available

Patent No.: WO2014/021169 (US9262680, JP, EP, CA, CN, KR, TW)

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