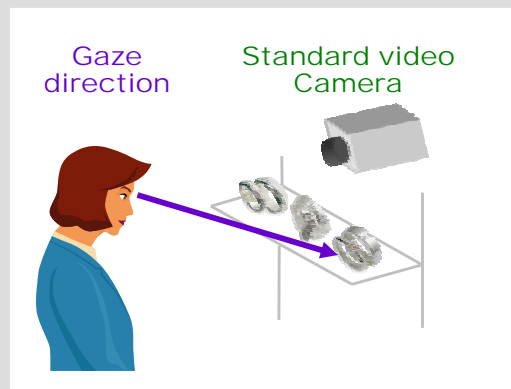


2006/9/20 Release

Estimating gaze direction from a standard video camera image - Enabling estimation of gaze direction from multiple unspecified individuals -

Summary of technology developed to estimate the gaze direction

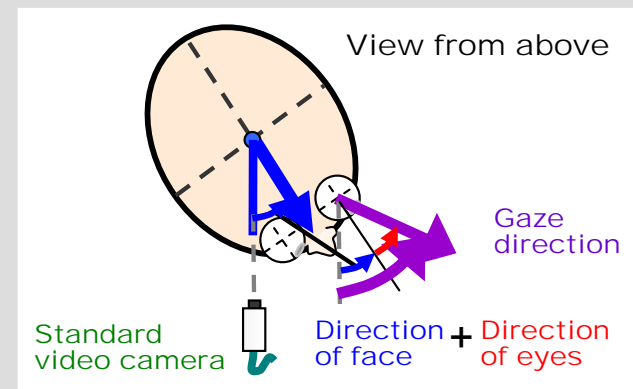


(1) Steps in estimating gaze direction

- The direction of face is determined as an angle from a given position by the camera
- The direction of eyes are determined as an angle from the front of the face
- Direction of the (face + eyes) = Gaze direction

(2) Estimation by projecting facial components on head and eye models

No calibration
Minimal individual difference



The Central Research Laboratory of Hitachi, Ltd., has developed a technology for estimating the gaze direction of unspecified person(s) in an image taken by a standard video camera. Conventional technology requires a specialized video camera (e.g. infrared or stereoscopic), as well pre-recorded data of sample facial images of the individual to be monitored, facing and gazing pre-determined directions to calibrate gaze direction. The technology developed enables gaze direction estimation from a standard video camera image without any individual pre-registration or calibration. This technology enables a wide range of applications including its use in marketing research such as what sort of advertisements, displays or sales item are receiving the most attention in a store, or in security to determine suspicious individuals through analyzing the gaze variance.

Research results relating to this technology were presented at the annual convention of the Institute of Image Information and Television Engineers (ITE), held at the Central Electric Club (Osaka) from 31st August - 1st September 2006.