Acquisition of Eye Images in the Gaze Tracker based on Depth Sensor and Zoom Camera

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Abstract—We designed and developed a gaze tracking device to provide comfortability in gaze tracking and freedom of head movement of a user to be applicable to the large display environment with a long Z distance. We also propose the method of stereo calibration and pixel mapping between the wide-angle camera and the depth sensor, and the method of PTZ calibration between the wide-angle camera and the zoom camera to make the device continuously and effectively track and capture the eye image even though a user's irregular movements in 3D space.

Keywords—Calibration, Gaze, PTZ, Tracking

HeeKyung Lee was born in Daegu, Korea, in 1976. She received her BS degree in Computer Engineering in 1999 from Yeungnam University, and MS in Information & Communication Engineering in 2002 from KAIST-ICC.

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Hoon Jo was born in Ulsan, Korea in 1986. He received B.S degree in 2012 at Hanyang University in Seoul, and has been studying on a master's and doctorate integrated program at same university. The major field of study of the author is computer vision.

He has been researched vision sensor based gaze tracking in the graduate school. He published three related conference papers: A robust gaze tracking method for users wearing glasses (Jeju-si, Jeju-do Workshop on Multimedia, 2013), Fast and accurate locating method of pupil center and glints for gaze tracking (Bangkok, Thailand: IWAIT, 2014), and Eye feature localization under visible light (Seoul, Korea: IEIE Signal processing society, 2014) His current research interest is stereo vision.