

## Virtual Eye Contact Engine

### Direct Eye Contact in Video Conferencing Systems



In video communication applications, the fundamental problem remains that users are looking onto the display and not into the camera. Due to this, the remote conferee does not perceive eye contact. However, the eye contact is one of the most important elements of non-verbal communication. Fraunhofer Heinrich Hertz Institute HHI developed the Virtual Eye Contact Engine that offers the required view for direct eye contact calculated from images captured by cameras mounted around the display.

### Challenges

The Virtual Eye Contact Engine is a software module, which computes the 3D structure of the scene captured by at least two cameras. The resulting depth information is used to render a novel view of a virtual camera at a position on the screen where the user is looking at (see figure on the right). Due to this, the user is able to perceive eye contact, which is one of the most relevant features of non-verbal communication. However, direct eye contact requires high quality 3D video processing at high spatial and depth resolution.

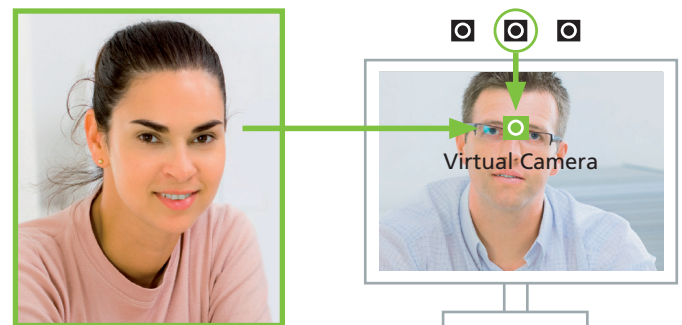
Due to the efficiency of the implementation of the software the following objectives are achieved

- Real-time processing with low delay
- Realistic and natural rendering of the remote participants with true eye contact
- Video processing at HD image resolution
- Support of any 2D, stereoscopic and autostereoscopic 3D displays

This software module is specifically dedicated for video conferencing systems such as desktop or telepresence systems.

### Benefits

In contrast to existing video conferencing systems, the user is able to look into the remote conferees eyes although he is being captured by cameras mounted around the display.



*Provision of direct eye contact using a virtual camera*

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