

High-quality, real-time 3D video streaming to head mounted displays

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Two-dimensional (2D) video streaming technologies, such as Skype, are used to connect people around the world for business and recreational purposes. As the trend continues in which society conducts itself in online environments, improvements to telecollaboration and telecommunication technologies must be made as current systems have about reached their limitations. These improvements are to ensure that interactions are as natural and user-friendly as possible.

The solution to the limitations imposed by 2D video streaming technologies is to stream 3D video to users in a virtual reality head mounted display (HMD). With three-dimensional data many things can be done such as eye-gaze correction, obtaining a natural angle of viewing and more. One common advantage to utilizing 3D in lieu of 2D is that when a viewer moves around their computer screen in physical space the streamed 2D image remains the same on the monitor. However, via the use of a head mounted display, the user can view their partner in virtual space in three dimensions almost as if they were sitting directly across from them.

With these improvements increased user perception and level of immersion in the digital world has been achieved. This allows users to perform at an increased level of efficiency in telecollaboration and telecommunication

environments due to the increased ability to communicate naturally with another human being. We will present our findings which support the notion that users better perceive their environments and also have a greater sense of interpersonal communication when immersed in a 3D video scenario as opposed to a 2D video scenario. This novel technology utilizes high-quality and real-time 3D scanning, processing, and live-streaming over a network which in turn allows the user to experience a realistic reconstruction within a virtual reality head mounted display.