360 Degree Panoramic HMD Immersion

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Panoramic video image acquisition is based on multiple overlapped sub-images. We will demonstrate high-resolution panoramic video by employing an array of five video cameras viewing the scene over a combined 360-degrees of horizontal arc and 50-degrees vertical. The five live video streams are digitized and processed in real time by a computer system. The camera lens distortions and colorimetric variations are corrected by the software application and a complete panoramic image is constructed in memory. Users can navigate the scene by wearing a head mounted display (HMD). A single window with a resolution of 800x600 is output to the HMD. A real-time (inertial-magnetic) orientation tracker is fixed to the HMD to sense the user’s head orientation. The orientation is reported to the viewing application through an IP socket, and the output display window is positioned (to mimic pan and tilt) within the full panoramic image in response to the user’s head orientation.