

## **Integrated Virtual Human Interface System with Portable Virtual Reality Capability**

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We demonstrate a photo-realistic, interactive virtual human agent application, called the *Virtual Human Interface* that employs virtual people to provide digital media users with information, learning services and entertainment in a highly personalized, visually rich virtual reality environment. The virtual digital human is capable of *seeing, detecting and recognizing* one or multiple people in front of the display and internally model, adapt to, and modulate the user's mood and emotional state via advanced facial information processing techniques. Additional real-time modules include a portable head mounted VR system to enhance the experience and live imagery captured from a video source to support augmented reality applications.

## **Common Office Equipment and CaveUT Make a Cheap Portable Cave**

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A low-cost immersive multi-screen display may be configured from common office equipment, some hardware, an inexpensive off-the-shelf game, Unreal Tournament (UT), and its modification "CaveUT." Each screen is lit by an LCD projector which is driven by a PC. All the PCs are connected via a standard LAN to an extra PC running the game server. The components could comprise a display with up to 32 screens of varying sizes, each one in any orientation to the viewer. CaveUT will coordinate their displays views, so they so they appear to be windows onto the same virtual world. This demonstration shows two screens at a right angle to each other, as a simple example. Stereo and head-tracking could be added without much programming effort, by anyone who can afford the equipment. Apart from being cheap, the partially open-source Unreal Tournament (UT) provides a powerful software platform appropriate for many types of VR applications. (Though not all!) UT and games like it support rapid development of models, efficient behavior programming for autonomous agents, internet-wide telepresence in shared virtual spaces and far more graphics power than traditional VR software approaches. CaveUT and the design of the portable two-walled cave is an open-source freeware effort, available at <http://planetjeff.net>.