ROOM-BASED TELEPRESENCE PROTOTYPE

DESCRIPTION:

KEY FEATURES & CAPABILITIES:
- The goal is to provide real-time 3D teleconferencing ability between two rooms, with “walk around” and “look around” capability, while preserving eye gaze between users.
- Currently, eleven depth cameras (using Microsoft Kinect) provide real-time 3-D acquisition of a 4 Meter x 4 Meter room.
- User sees a view of the remote room from his or her viewing perspective as if looking through a digital “window”.

The remote room is displayed in stereoscopic 3-D on two 65-inch LCD panels to a user wearing 3-D stereo glasses. Stereo glasses worn by the viewer are tracked by seven OptiTrack cameras. System runs on a single standard PC.

POTENTIAL REAL-LIFE APPLICATION:
- An enhancement for existing professional teleconferencing systems. Natural eye gaze support allows more non-verbal communication to be preserved. Full 3-D room scanning, combined with look-around capability enables users to view naturally all parts of the distant space, with no parts of the remote space, and remote people, outside of the cameras’ field of view. Walk-around viewing capability frees users to move naturally to use white boards and other tools within their space.
- A virtual window between two remote locations. A system set up between common areas of two remote sites could provide the appearance of a connection through a virtual shared wall. Users could naturally interact between sites and as they visit the common area (such as a break room) throughout the day, allowing a casual and free exchange of ideas, just as would occur locally.

SUPERVISED BY:
- Professor Henry Fuchs, UNC-Chapel Hill
- Professor Anselmo Lastra, UNC-Chapel Hill
- Professor Greg Welch, UNC-Chapel Hill

TEAM MEMBERS:
- PhD Students:
  - Andrew Maimone, UNC-Chapel Hill
- Researcher:
  - Andrei State, UNC-Chapel Hill

BACKGROUND:

This is a project under the BeingThere Centre, a new international research centre for telepresence and telecollaboration, established by Nanyang Technological University (NTU, Singapore), Swiss Federal Institute of Technology Zurich (ETH Zurich, Switzerland) and University of North Carolina at Chapel Hill (UNC-Chapel Hill, USA), and the Media Development Authority of Singapore. The collaboration boasts a team of top scientists across three continents embarking on joint R&D projects to develop telepresence system prototypes for the 21st century.