Contextproject: Health Informatics

Virtual reality

The company CleVR specializes in creating complete and customized Virtual Reality (VR) solutions. CleVR delivers interactive custom built VR software and hardware for a wide range of purposes in the (Mental) Health Care sector (such as fear of heights, fear of flying, Psychosis and Social Phobia) and training sector, where the user is able to interact with the computer in a natural and intuitive way. These products are combined in a unique package that their customers can use straight away.

Currently they are working on several projects and within these projects they have formulated two technical challenges on which individual student groups can work. They are:

- **Developing 2D control map for therapist**. CleVR has developed a VR world for the treatment of patient with psychosis. In these worlds patients can interact with virtual humans in a social context, for example in a bus or supermarket. To make social scenario even more interactive CleVR likes to give therapists control software, for example running on a tablet, where they can control the virtual world and the virtual characters real-time. The VR software is developed in Unity and the starting point for the user interface for controlling the world would be a 2D map of the world.
- **Physical interaction in virtual reality**. CleVR has developed a supermarket world in VR through which patients can navigate. To make the VR experience even more interactive and more immersive they like to extend the world by given the user a virtual body, and also the possibility to touch virtual objects. This means that they like to use trackers to Kinect/Leap and other optical techniques to track a persons body movement and VR Gloves (https://manus-vr.com/) so that people can pick up objects.

Students in the project will work under the supervision of an employee of CleVR and Willem-Paul Brinkman (TUD).

The project will start with a Kick Off seminar which will introduce students into the topics, a tour at CleVR with a demo of their products, followed by an introduction to their software framework. CleVR uses Unity and C# as their development environment.

For more information about CleVR see http://clevr.net/

Literature

Brinkman, W.-P., van der Mast, C., Sandino, G., Gunawan, L.T., and Emmelkamp, P., "The therapist user interface of a virtual reality exposure therapy system in the treatment of fear of flying", *Interacting with Computers* , vol. 22, no. 4, pp. 299-310, 2010.

Veling, W., Brinkman, W.P., Dorrestijn, W., van der Gaag, M. (2013) Virtual reality experiments linking social environment and psychosis; a pilot study. *Cyberpsychology, Behavior, and Social Networking*.

Isnanda, R. G., Brinkman, W. P., Veling, W., van der Gaag, M., & Neerincx, M. (2014). Controlling a stream of paranoia evoking events in a virtual reality environment. *Studies in health technology and informatics*, 199, 55-60.

For pre-print see http://mmi.tudelft.nl/willem-paul/index.php/Literature