PROJECT IDEAS

Contact Details: Dr Wole Oyekoya (o.oyekoya@ucl.ac.uk)

Project 1: Visualizing Interactive 3D Games

Conduct a comparative study of CAVE, 3D Desktop and Smartphone/Tablet Systems for playing highly interactive 3D games. In the Virtual Environments and Computer Graphics group, we use the Unity game engine to deploy to the CAVE, desktop and Android/iPhone. The student would not require knowledge of Unity, as we'll be using one of many available code samples or a previously-built learning game (with minimal changes) to deploy to this platforms. I can guide the student with this. The students would be focussed on collecting data and analysing the immersion experience of users. Games on smartphones are highly interactive and findings from this study would test the immersion levels compared to highly immersive CAVE and conventional desktops.

Skills Required: Knowledge of Unity3D game engine is not required but it will be helpful. The focus is on the user study.

Project 2: Remote Telepresence Robot

The growing trend towards telecommuting has driven companies to seek ways for remote workers and teams to communicate and collaborate more efficiently and effectively. Although remote workers have depended on real-time audio/video communications tools for many years, including Skype, Facetime, Google Talk, and various dedicated video-conferencing equipment and service, nothing truly offered a "being there" — or better yet, "moving around there" — experience. What was lacking was the ability to work within the remote environment, chatting with managers and staff, attending both scheduled and spontaneous meetings, and solving problems encountered through those interactions.

Anybots QB is a remote telepresence robot driven via the Cloud through a web browser. The user can log in to the Anybots.com website and drive the unit off the charging station to interact with people and explore without needing to leave their desk. On-board is a touch screen display, speaker and microphone plus a laser for pointing at objects.

The Virtual Environment and Computer Graphics group has just purchased a QB robot and we are seeking students to conduct user studies (such as [1]and [2]). An example of a study could be on its use for attending lectures, etc.

References

[1] Desai, M., Tsui, K., Yanco, H., and Uhlik, C. Essential features of telepresence robots. In Technologies for Practical Robot Applications (TePRA), 2011 IEEE Conference on, IEEE (2011), 15–20.

[2] Lee, M. K., and Takayama, L. "Now, I have a body": Uses and social norms for mobile remote presence in the workplace. In Proceedings of the 2011 Annual Conference on Human factors in Computing Systems, CHI '11, ACM (New York, NY, USA, 2011), 33–42.

Project 3: Attention Model Driven Navigation

In this project, you'll work in Second Life to navigate a user from one location to another in a virtual environment using teleportation technique. The teleport destinations will be driven by a model of attention (see references below).

Skills Required: Essential skills include C, C++ and an understanding of basic 3D maths.

References

[1] Oyekoya, O., Steptoe, W., and Steed, A. 2009. A saliency-based method of simulating visual attention in virtual scenes. In *Proceedings of the 16th ACM Symposium on Virtual Reality Software and Technology* (Kyoto, Japan, November 18 - 20, 2009). S. N. Spencer, Ed. VRST '09. ACM, New York, NY, 199-206. http://web4.cs.ucl.ac.uk/staff/W.Oyekoya/vrst09.pdf

[2] Kokkinara E, Oyekoya O, Steed A. (2011). Modelling Selective Visual Attention for Autonomous Virtual Characters, Journal of Computer Animation and Virtual Worlds, CASA 2011, Chengdu, China.

[3] Oyekoya O, Steed A., Pan X. "Exploring a Model of Gaze Animation using Human Eye Behaviour," Joint Virtual Reality Conference (EuroVR-EGVE), 20-21 September 2011, Nottingham UK.