

Development of a visual impairment simulator using the Microsoft XNA Framework

J Lewis, L Shires, D J Brown

Computing and Technology Team, School of Science and Technology, Nottingham Trent University, UK

james.lewis@ntu.ac.uk, david.brown@ntu.ac.uk

www.ntu.ac.uk

ABSTRACT

This paper describes the development of a visual impairment simulator based upon a virtual environment developed using Microsoft's XNA framework and High Level Shader Language. Shaders were developed to simulate the effects of cataracts, macular degeneration, glaucoma, myopia and hyperopia. These were then used to impair the real time display of an explorable 3D virtual environment. The simulator was evaluated by a qualified optician and trialled with a group of students. The paper concludes that further development is required to fully and accurately represent the impairments, however the simulator remains effective in improving participants level of understanding of visual impairments.

Full papers will be published in the Conference Proceedings and will be available to delegates at the conference on Sept. 10.

Full papers will be released on-line in the ICDVRAT archive on March 15.

1.