Serious gaming expert, Bill Kapralos, PhD, is exploring the technology behind virtual reality to create advanced training and education experiences for healthcare professionals. Intrigued by the dynamic nature of his work, the relatively new field of serious gaming is exploding across many sectors as a way to engage and motivate students to learn.

Dr. Kapralos is an associate professor in the Faculty of Business and Information Technology in the Game Development and Entrepreneurship Program at the University of Ontario Institute of Technology (UOIT). He joined UOIT as an assistant professor in 2006, and serves as an adjunct professor in the Faculty of Graduate Studies, Department of Computer Science and Engineering at York University in Toronto, Ontario.

He turned his childhood hobby into an established teaching and research career. Long before gaming became popular; he would write and program his own video games, which naturally led him to study computer science. Dr. Kapralos pursued his undergraduate and graduate studies in the Department of Computer Science and Engineering at York University in Toronto, Ontario, completing a Bachelor of Science (Honours and 1st Class Distinction), in Computer Science in 1999. He began his career as a teaching assistant in the same department and held the position throughout his graduate studies.

During his graduate studies, Dr. Kapralos became immersed in the technical aspects of gaming and virtual reality worlds, and sought to understand the science and technology behind their development. He focused on rendering these worlds to make them realistic and earned a Master of Science in Computer Science in 2001; and received his Doctorate of Philosophy in Computer Science in 2006.

At UOIT, he saw a need for applying gaming and virtual reality technologies to health profession training. Passing on his knowledge and expertise in this burgeoning field to his students has its share of rewards; Dr. Kapralos is thrilled to be able to guide their research and academic achievement, and see their success upon graduation. For his work, he has been honoured with the 2010 Google Faculty Research Award as a co-recipient; and he received the 2009 IBM Center for Advanced Studies Faculty Award. In May 2014, Dr. Kapralos was awarded an NSERC-JSPS (Japan Society for the Promotion of Science) Fellowship.

Education/Learning, Training and Development, Health and Wellness, Computer Gaming, Research

Serious Games That Maximize Knowledge Transfer and Retention, Perception of Auditory Events, Real-Time Acoustical Modelling, Serious Games/Gaming, 3d (Spatial) Sound Generation, Multi-Model Virtual Reality/Environments

Institute of Electrical and Electronics Engineers

The effect of contextual sound cues on visual fidelity perception

Medicine Meets Virtual Reality 2014
The impact of secondary-task type on the sensitivity of reaction-time based measurement of cognitive load for novices learning surgical skills using simulation
Medicine Meets Virtual Reality 2014

The missing piece in the gamification puzzle
ACM Gamification 2013

A crash course on serious games design and assessment: A case study
In Proceedings of the IEEE Games Innovation Conference (IGIC) 2013

Interactive rate virtual sound rendering engine
In Proceedings of the 18th IEEE International Conference on Digital Signal Processing (DSP 2013)

Spatial sound and its effect on visual quality perception and task performance within a virtual environment
Proceedings of the 21st International Congress on Acoustics

The use of web-based learning for simulation-based training of central venous catheterization in novice learners
Medicine Meets Virtual Reality 2013

Impact of floating windows on the accuracy of depth perception in games
In Proceedings of Stereoscopic Displays and Applications XXIV

An interactive in-game approach to user adjustment of stereoscopic 3D settings
In Proceedings of Stereoscopic Displays and Applications XXIV

S3D depth-axis interaction for video games: performance and engagement
In Proceedings of Stereoscopic Displays and Applications XXIV

The effects of 5.1 sound presentations on the perception of stereoscopic imagery in video games
In Proceedings of Stereoscopic Displays and Applications XXIV

The effects of audio on depth perception in S3D games
Audio Mostly 2012

A course on the design and development of serious games and virtual simulations
In Proceedings of the IEEE International Games Innovation Conference

Blaze: A serious game for improving household fire safety awareness
In Proceedings of the IEEE International Games Innovation Conference

Beyond the screen: What we can learn about game design from audio-based games
A framework for sound localization experiments and automation
In Proceedings of The ACM Joint International Conference on Human-Centered Computer Environments (HCCE 2012)

Developing effective serious games: The effect of background sound on visual fidelity perception with varying texture resolution
Medicine Meets Virtual Reality 19

An online practice and educational networking system for technical skills: learning experience in expert facilitated vs. independent learning communities
Medicine Meets Virtual Reality 19

Evaluation of tensiometric assessment as a measure of skill degradation
Medicine Meets Virtual Reality 19

Interactive floating windows: a new technique for stereoscopic video games
In Proceedings of the Stereoscopic Displays and Applications XXIII

Stereoscopic 3D video games and their effects on engagement
Proceedings of the Stereoscopic Displays and Applications XXIII

Experimenting with a framework for networked mobile audio arrays
In Proceedings of the Audio Engineering Society 44th Conference on Audio Networking

SCETF: Serious game surgical cognitive education and training framework
In Proceedings of the Third IEEE International Games Innovation Conference

GPU-based acoustical occlusion modeling with acoustical texture maps
In Proceedings of ACM Audio Mostly 2011

Serious games in the classroom: Gauging student perceptions
Medicine Meets Virtual Reality 18

A serious game for off-pump coronary artery bypass surgery procedure training
Medicine Meets Virtual Reality 18

GPU-based acoustical diffraction modeling for complex virtual reality and gaming environments
In Proceedings of the Audio Engineering Society 41st International Conference: Audio for Games

Audio air hockey: A pilot study in using audio- based games for the measurement of loudspeaker placement preferences for smart tables
In Proceedings of the Audio Engineering Society 41st International Conference: Audio for Games

A serious game for collaborative intercultural business communication
Not just a Game: Using games as methods of evaluation of usability and user experience in human-computer interaction design

Serious games for interprofessional education for critical care response teams
Group Awareness in Online Work, Learning, and Games Workshop at HCI 2010

Off-pump coronary artery bypass surgery procedure training meets serious games
In Proceedings of the International Symposium on Haptic Audio-Visual Environments and Games

Amplitude panning-based sound system for a horizontal surface computer: A user-based study
In Proceedings of the International Symposium on Haptic Audio-Visual Environments and Games

Best practices for applying sonification to support teaching and learning of network intrusion detection

Using a virtual learning environment with highly interactive elements in Second Life to engage millennial students

Internet mediated, peer-to-peer feedback for learning of patient transfer skills: Prototype development and testing
World Conference on Educational Sciences (WCES) 2010

Serious games for knee replacement surgery procedure education and training
World Conference on Educational Sciences (WCES) 2010

The use of virtual simulations in a laptop-based university
World Conference on Educational Sciences (WCES) 2010

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York University
PhD Philosophy, Computer Science

York University
MSc Computer Science

York University
BSc Computer Science
Associate Professor, Faculty of Business and Information Technology, UOIT
Dr. Kapralos teaches undergraduate courses in Game Sound, Computer Architecture, and Serious Games and Simulations; and graduate courses in Serious Games Development. He had received many research awards from industry and the government including the Natural Sciences and Engineering Research Council of Canada.

Co-editor, The Oxford Handbook of Interactive Audio
Dr. Kapralos is the co-editor of The Oxford Handbook of Interactive Audio. Published by Oxford University Press in 2014, this first of its kind book offers a new set of analytical tools for the field of interactive sound; it proposes the first theory of interactive audio; and it explores the full range of interactive audio in video games, performance, education, environmental design, toys, and artistic practice.

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