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Abstract

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The Anesthesia Crisis Scenario Builder (ACSB) for Virtual Anesthesia Crisis-Based Training

Kyle Wilcocks ¹, Sandy Abdo ², Bill Kapralos ³, Alvaro Uribe Quevedo ⁴, Adam Dubrowski ⁵, Fahad Alam ⁶

1. Faculty of Science, Ontario Tech University, Oshawa, CAN 2. Health Sciences, Ontario Tech University, Oshawa, CAN 3. maxSIMhealth Group, Ontario Tech University, Oshawa, CAN 4. Software and Informatics Research Centre, Ontario Tech University, Oshawa, CAN 5. Health Sciences, Ontario Tech University, Montreal, CAN 6. Anesthesiology, University of Toronto, Toronto, CAN

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Abstract

Background: Designing medical-based virtual learning environments (VLEs) for anesthesia crisis training is not a trivial process, requiring the collaboration of an interdisciplinary team with expertise in game development/computer science, education, and medicine. The majority of VLEs focus on specific scenarios. This one-size-fits-all approach does not allow for the scenario to be modified in a simple manner, often requiring the involvement of a development team. Such a limitation is, in part, due to the costs associated with the development of digital media that requires artists, developers, and the content experts to follow software development cycles.

Objective: To develop the anesthesia crisis scenario builder (ACSB) framework that will allow medical educators to create and customize virtual anesthesia-based training scenarios in a simple and intuitive manner with limited, if any, programming experience using the META Quest 2.

Description of the Innovation: The ACSB eases the creation of virtual practices through a user-friendly graphical user interface within the virtual reality headset that removes obstacles associated with programming, audio-visual content creation, and deployment. The ACSB framework walks the user through the scene creation process in an intuitive manner. Once the scenario is created or edited, a virtual operating room is created to support all the needed interactions such as using a syringe, intubation, and adjusting the given oxygen. During the scenario an automated system is grading the user on the time it takes between tasks and their situational awareness of the situation through gaze tracking. The resulting scenario complies with the steps found in the anesthetic crisis manual (ACM).

Impact: The ACSB framework was developed to allow for the simple development of (or modification of existing), anesthesia-based virtual simulation scenarios. Although greater work remains, a preliminary study was conducted whereby medical educators used the ACSB framework to develop a scenario (dealing with anaphylaxis) and then use it showed that medical educators enjoyed using it and were positive about the potential training opportunities it may provide.