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A Simulation System Design on Radiography: a Preliminary Study

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Introduction

VR technology has shown great promise in the research and development, training, and education of medical physiology, gastrointestinal endoscopy simulators, clinical anatomy simulators, among other applications. In addition, it is widely used in the field of medical imaging. According to foreign studies, VR simulation featuring dynamic interaction and feedback can help students in related medical imaging degrees cultivate their clinical skills.

In radiography, the integration of VR with the cultivation of radiography talents to perform online and offline theoretical and practical courses have the advantages of both high efficiency and convenience.

Literature Reviews

Image-guided radiation therapy (IGRT) uses advanced imaging technology to better define the tumor target and is critical in reducing and ultimately eliminating uncertainties. Currently, most radiologic technology programs teach students positioning and radiation dose techniques in a traditional X-ray laboratory. Virtual simulation provides a safe and convenient learning environment where students can practice techniques without the risk of irradiating patients. Instructors can foster deep learning in virtual simulation laboratory environments by designing the software around specific course outcomes (e.g., cognitive and psychomotor skills) and engaging in sound educational strategies and theory.

Method and System Design

communicates with Unity at the hardware layer together with Open VR API and Steam VR API. The system is supplemented with specific exoskeleton data and object configurations to create a complete set of VR interactive experiences after compilation by Unity. Once the scene is constructed, the VR device is connected to Unity through the API. After the compilation is executed, the API will immediately judge and process the tracking information of the locator, output it as an image through operations in Unity, and send it back to the helmet to achieve the final visual feedback effects.

Expected Results and Future Works

Currently, this study only presents preliminary system design results. In the near future, this study will be used to develop a complete VR radiography simulation system. The application of VR technologies in the medical care industry is gaining popularity.