Enhancement of a Fully-Immersive Virtual Reality Environment for Teaching Radiation Detection and Protection

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Introduction and Motivation

- Use of fully-immersive virtual reality to teach radiation physics and protection to public
- Built upon Unity game engine for Oculus Quest
- Game performance enhanced using Blender 3D modeling software

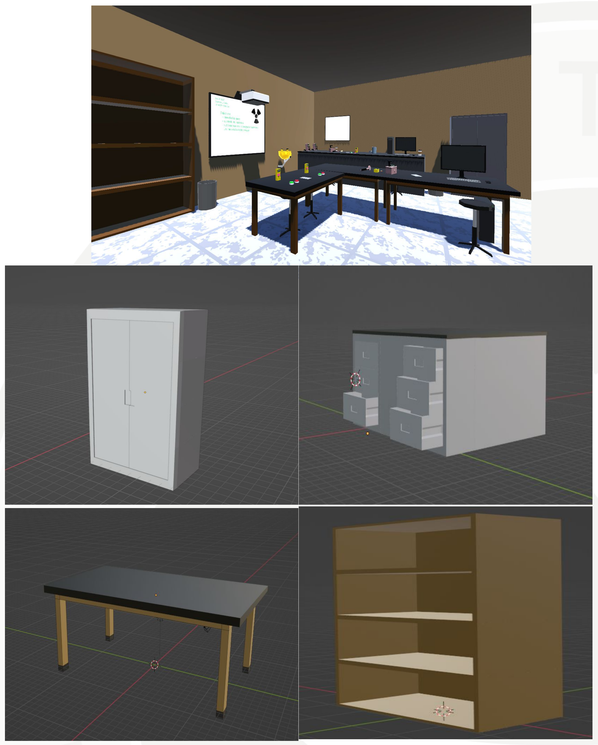
Technical Approach

- 3D Models of Radiation detectors such as dosimeters are essential for DoseBusters
- DoseBusters library is inspired and based upon modern radiation tools and safety equipment

Next Steps

- Having the tutorial fully complete and ready-to-play is the next priority for the game.
- creation of higher game levels involving problems in radiation protection.

Results



Conclusion

- The tutorial setting has undergone substantial changes to improve playability.
- Future work includes coding of greater radiation detector physics and interactions

Educational Posters Illustrating Radiation Physics in the Tutorial Room of a Fully Immersive 3D Virtual Learning Environment (A Poster About A Poster)

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Introduction and Motivation

- More realistic VR spaces offer a better immersive experience and learning environment
- The educational aspects posters will add to scenes will allow the user to better understand radiation concepts

Results

Technical Approach

- Generated using Photoshop and inserted as Unity textures
- Best practices for technical communication
- Adequate size and proper font
- Design must match the game's art style and display information simply
- Distinct usage of white space and color
- Content must be engaging and clear

Conclusion

- multiple safety posters have been created
- Generated a more representational radiation lab environment
- Templates of smaller items have been made

Next Steps

- Signage based on actual practices and regulations will be integrated
- More radiation focused posters

Mission Relevance

- The more knowledge we can make readily available, the more the public is informed on issues related to radiation.
- Early enjoyment of the radiation game could lead to students majoring in NSSA relevant fields such as NERS.
- Proper safety protocols against radiation means a more survival ready society.

Expected Impact

- Radiation can be very harmful and complex; Virtual reality can minimize exposure while reinforcing concepts
- A zero dose learning tool allows for a better understanding of radiation detection and safety
- More interactive and engaging learning, leading to better information retention.

MTV Impact

- MTV funding provided useful supplies for our lab
- An opportunity to build presentational skills
- The ability to speak to others involved in this field and expose our project to new ideas,

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