

UR-295 Data Collection in Parkinson's VR

Abstract

This project is meant to show the addition of different methods of data collection to a Parkinson's simulation within VR. There are now several different methods of data collection implemented for collecting data during live gameplay. These data points are tracked and logged in a way meant to allow researchers to easily make more effective use of the simulation as a tool for research. A demo video and the simulation are available using the QR code at the bottom.

Introduction

Our work is a continuation of the Parkinson's VR project, which was presented by a different student during the Spring 2020 C-Day showcase. Originally, the goal was just to build empathy in medical students for patients with Parkinson's disease. The new data collection methods added to this project allows researchers using this project to better leverage the simulation as a means for collecting valuable data regarding what is most effectively building empathy in medical students. These insights may lead to more effective simulations in the future, even for other ailments besides Parkinson's disease. This is valuable because empathetic behavior from medical professionals is shown to produce higher satisfaction and better outcomes for patients.^[1]

Methods

After finishing full portions of their morning routine, players will now be presented with a survey that impedes progress until completed. Each survey asks the player how empathetic they are currently feeling towards Parkinson's patients. The possible responses are presented on a 5 point Likert scale ranging from strongly disagree to strongly agree. These responses are then recorded on a spreadsheet that tracks the individual responses each player makes at each of the surveys in the game. This data on player empathy is used as a baseline for making use of the data collected discretely during gameplay. This discrete data includes how many times a player had an error during play and during each subtask (i.e. dropping an item they did not intend to drop), how long they took to complete each task and its subtasks, and the score they earned throughout. The score is based upon how many tasks were successfully completed and how long each task took the player to complete. This data is also tracked in a spreadsheet and indexed by player number.

Tools used:



Results

By adding expandable data collection methods to the Parkinson's VR simulation, it has had its utility greatly increased. Researchers at Augusta University have already begun collecting data using the simulation and the newly implemented methods. The team eagerly awaits feedback on how satisfied researchers are and how the project could be further expanded. While we do not have access to the data gathered to report here do to privacy concerns, we do know that the clients are satisfied with our efforts.

Survey as shown in-game:



Example of saved responses:

	A	B	C	D
Player Number	BedToBath	BathToBed	KitchenToBed	
1	2	3	4	
2	4	5	4	
3	1	5	5	
4	4	4	4	
5	3	2	4	

Example screenshot of gameplay:



Conclusions

The goal of the project was accomplished by providing researchers with more insight into the minds of medical students regarding what may be building empathy for patients. This data may be used to improve the Parkinson's VR simulation and to help guide new simulations that have the same goal. Further improvements are possible by using more advanced data collection techniques, such as biometrics. Hopefully the improvements made here will ripple outwards to impact the methods used in future research-oriented simulations.

Acknowledgments

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See More

Video Demo:



References

[1] YU, C.C., TAN, L., LE, M.K. et al. The development of empathy in the healthcare setting: a qualitative approach. *BMC Med Educ* **22**, 245 (2022). <https://doi.org/10.1186/s12909-022-03312-y>