Can an Unknowing Participant distinguish between Procedurally generated and Human designed Interiors? - WIP title

Thomas O'Leary

Abstract—**What's the problem? What am I looking at? How does that help solve the problem?**

Opening, Challenge, Action, Resolution

Decorating an interior can be time consuming. *Define time consuming?.*
Attempt to see if procedural generated interiors can be percieved as human designed. Comparing the two together and see if participants prefer the procedurally generated designs.

I. INTRODUCTION

Urban open world games such as Grand Theft Auto V [1], The Division [2] and Batman: Arkham Knight [3] have such large built-up areas for players to venture in, but many buildings are blocked off - if you're lucky to have access to a building you are still very limited to the rooms you are able to enter. Possibly ruining the immersion of the game for players.

This problem could be fixed by having developers designing each and every room in every single building within the vast urban environment. But this would become a very time-consuming and impractical task.

Using Procedural Generation (PCG), this largely time-consuming task of designing room interiors can be automated. And can possibly help maintain a player's immersion within the game.

An issue with this however is that PCG tool's can be seen as boring and repetitive [4]

Through my literature review though I have found many implementations and techniques of Procedural Interior Generation (PCIG), none of these get compared to Human designed interiors.

This study looks to see if a participant is able to tell the difference between Human designed and AI generated interiors.

II. LITERATURE REVIEW

Go into a level of detail about how procedural interior generation can be done. (Different methods etc)
Paper that I read. Only writing this to test that my .bib file is working. [5]

III. RESEARCH QUESTION

From the above sources, I have formed **actual research question that's totally not wip anymore**

A. hypothesis & null hypothesis
Hypothesis stuff...

IV. ARTEFACT

A. What will be made

AI that procedurally generates interior at runtime in a pre-defined room size and access to pre-made furniture assets. Will be later compared with human designed interiors (being given the same room size and assets)

B. How will I ensure Quality

Quality control. Roadmap? Unit Testing? Integration testing?

C. How will I create it

The AI will be made in the Unity game engine (Version 2020.3.12f1)

D. Why will this answer the questions

Haven't figured that out yet chief

V. RESEARCH METHODOLOGY

A. Experimental Design

B. Limitations

Time, resources

C. Sampling Plan

Sample size, sampling method

D. Data management plan

Managing, collecting, & storing data

E. Data Analysis

Something to do with R

F. Ethical Considerations

I plan to not commit war crimes I promise

VI. APPENDIX

Data analysis code, supporting screenshots, list of unit tests & testing plan

REFERENCES

[1] Rockstar North, *Grand Theft Auto V*. Rockstar Games, New York, NY, USA, 17 September 2013.

[2] Massive Entertainment, *The Division*. Ubisoft, Montreuil, France, 8 March 2016.

[3] Rocksteady Studios, *Batman: Arkham Knight*. Warner Bros. Interactive Entertainment, Burbank, CA, USA, 23 June 2015.

[4] T. Short and T. Adams, *Procedural Generation in Game Design*, ch. Managing Output: Boredom Versus Chaos, pp. 13 – 21. CRC Press, 2017.

[5] T. Germer and M. Schwarz, "Procedural arrangement of furniture for real-time walkthroughs," *Computer Graphics Forum*, vol. 28, no. 8, pp. 2068 – 2078, 2009.