

# **GENERATING TILELESS, NON-RECTANGULAR DUNGEONS FOR 3D GAMES**

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## ABSTRACT

Dungeons are one of the common types of levels featured in video games, and of the types of levels that are commonly generated procedurally. While existing dungeon generation systems are sufficient for the designers, concerns raised by the players regarding procedurally generated levels being generic and repetitive indicate the need for unique and varied dungeon levels, especially procedurally generated dungeon levels. Most of the existing dungeon generation systems use tile assets as atomic units as it is easier to implement, yet this limits the resulting dungeon levels in terms of uniqueness and variety.

Due to the limitations persisting within existing dungeon generation systems, the author proposes a novel tileless dungeon system to address the problems. The proposed solution intends to overcome the limitations of tile-based dungeon generation systems by generating dungeons by employing mesh manipulation and reinforcement learning.

As the initial implementation focused primarily on generating rooms, it was observed that the system could produce various unique rooms by manipulating the corners of the room. Further implementation and improvements are planned to be executed before long.

**Keywords:** Dungeon generation, Tileless dungeon generation, Reinforcement Learning, Machine Learning, 3D Dungeons, Video Games, PCGML, PCGRL