Snake in the Labyrinth

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Abstract

Snake in the Labyrinth is an audiovisual art installation that merges the classic early Snake video game with a maze, presented in the style of early 1990s first-person video games such as *Wolfenstein 3D*. Seen from a first-person perspective (i.e., that of the snake navigating the labyrinth), the visual movement and the music are driven by the decisions made by a deep Q-learning network (DQN). This deep machine-learning network plays a Snake game repeatedly and learns from its failures (i.e., collisions) to inform its future movements. It is part of a series of artworks exploring the use of the process—rather than the outcomes—of machine learning to shape artworks. In the Snake game, the player chooses to move up, down, left, or right and tries to continue moving as long as possible without colliding. In this work, those movements are reflected from the snake's first-person perspective, in a crude 2.5D style inspired by early first-person labyrinth video games. This crudeness and rigidity reflect the un-humanness of the machine learning process and highlight moments of compelling gestures when they happen to appear in the visuals or the music, as the learning model adapts and evolves. Musically, the movements by the snake trigger changes in pitch, navigating up and down through a harmonic series, moving by narrower intervals and at faster paces as the snake performs better, reflecting focus—a flow state—and a feeling of progress. Conversely, wider intervals and slower passages reflect moments when the snake has not performed well and should reflect on its experiences and rethink its approach. As with the graphics, the music draws inspiration from heavy metal soundtracks for first-person games such as *DOOM*, using custom-coded physically modeled instruments. In all, the work juxtaposes the mechanical and the organic, running and reflecting, repetition and evolution.