Sound Wanderer: An Experimental Game Exploring Real-Time Soundtrack with OpenDA

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Abstract. There is much to explore in procedural audio for games since there are not many technologies that support it. In this work we extend our ongoing research on such technologies by presenting an experimental game that showcases some of the possibilities of using our real-time soundtrack middleware for digital games. We intend to let users play the game as we observe the impacts of our sound design over the gameplay experience.

Keywords: game audio, game music, real-time soundtrack, computer music, middleware

1 Rationale

Soundtrack is often neglected in the development of audiovisual entertainment media, being typically assigned one of the lasts positions in the production pipeline and seldom given more than leftover budget. In digital games, one particularly under-explored soundtrack potential is the medium's interactive nature. While games showcase their action, immersive graphics or endless possibilities, their sounds remain predominantly limited to triggered effects and looped playback, oblivious to the endless space of sonic possibilities.

One of the key factors that contribute to this situation is the lack of technologies that enable the production of truly dynamic audio or real-time soundtracks. Most development tools revolve strictly around sample assets and when they should be played instead of how they could be crafted to fit the gameplay context in the first place (Farnell 2007). Overuse of samples leads to high computer memory demands and disproportionate work over file system management, not to mention authorial issues.

In our ongoing research, a middleware for real-time soundtrack in digital games named OpenDA is under development. While being an attempt towards newer and more responsive game audio in response to the asset-driven culture, it faces a series of technical and artistic challenges. We then designed a way to both evaluate the extent of its features and experiment with innovative ways of using real-time audio in a digital game. Thus, in this demonstration, we present

Sound Wanderer, a desktop game for GNU/Linux where the soundtrack plays an active role in the gameplay using an experimental version of our middleware, Open Dynamic Audio[3].

2 Demonstration Description

Sound Wanderer is a single player, 3D first-person exploration game. The player controls a person that wakes up in an unknown indoors place, where barely any light is present. Using a couple interactions with the environment they can try and make out their surrounds by the sounds they hear. It is intended to be a very short experience, with about five to ten minutes of gameplay. Each time the player is given a set of paths to take and their choices leads to one of the many conclusions to the narrative.
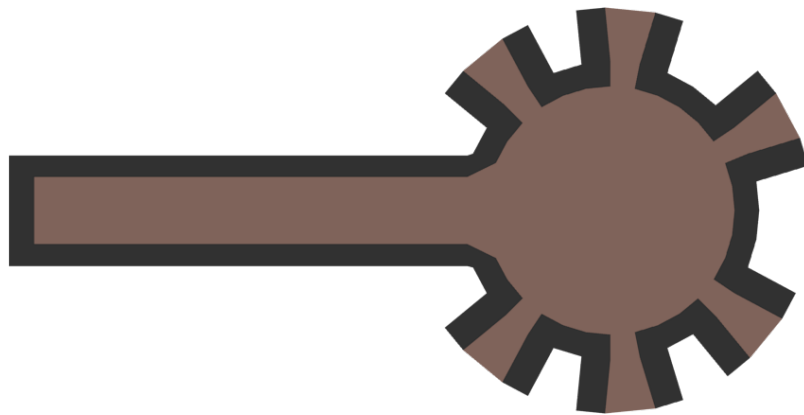

Fig. 1. Sound Wanderer game map.

It starts in a tunnel that leads to a large chamber. There, several paths can be found. By moving and poking around, the player is given sonic hints to what may lie ahead. Eventually, after a path is picked, the game moves to a new scene, where a few choices are given and the game quickly reaches an end. During gameplay, each of the player's interactions will influence the soundtrack, either by shaping new timbres, intervening with the ambience or guiding the music track. It is not our intention to make any particular sense out of the narrative, just explore the sound experiences that are normally out of reach to the traditional development tools.

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[3] Source code available at https://github.com/open-dynamic-audio

3   Possible endings

From the chamber, each exit leads to a route, and each route has two or more endings. For now, the routes under consideration are:

1. A sleeping monster's lair, signaled by its snores
2. A dance party, with its bass rumbling through the walls
3. A damnation room filled with dread where the player inevitably gets lost
4. A beach, foreshadowed by the sound of waves

As an example of multiple endings, let us illustrate a possible outcome to the route of the dance party. Upon arrival at the dancing floor, the player can either drink or dance. Drinking distorts the playing music, while the dance influences the music mixing and tempo (BPM). In the damnation room, on the other hand, a sonic space is created, a musical biome, where the player can wander at will. Slowly, this ambience changes without ever repeating itself due to a generative real-time mechanism, allowing many attention levels.

4   Equipment

The demonstration is essentially composed of one notebook where users can promptly start a gameplay session, using a gamepad and wearing headphones. More specifically, the demonstration setup requires:

1. A standing table or a desk with a comfortable chair
2. An average notebook with a running Linux
3. An Open Dynamic Audio middleware installation
4. A Sound Wanderer game installation
5. A gamepad with directional controls and at least three other buttons
6. A pair of headphones

For convenience purposes, it is our intention to provide the notebook already properly configured and ready to run. It requires a power source, but no internet connection.

5   Interaction

The demonstration was designed to be played only one person at a time but, if more headphones are available, other close by users can participate by sharing the audio experience and giving insights to the active player. Nearby interested parties are invited to participate, and only a brief explanation is given about the controls before letting the users explore the experiences by themselves. One session lasts for a whole playthrough, and then the next user may have their turn. We encourage a retrospective discussion afterwards, in order to enlighten the visitants about the proposal and to provide feedback for our research.

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