What needs to be considered when implementing an adaptive music system for games?

Ashley Sands

March 11, 2019

Why Adaptive Audio?

Games are non-linear, so the audio in games should also be non-linear

Linear Music

-Unable to adapt to the users experience

-Repetitive

Adaptive Audio

Adaptive Audio allows the music to be adapt based on the users actions

Adaptive Music

-Dynamic
-Interactive
-Enhances the users experience

Approaches

Adaptive music can be approached using pre-recorded sounds or algorithmically although both can work in harmony

Pre-recorded Audio Layers

Pre-Recorded Audio Layers can take advantage of any technique, tool or instrument but

-Harder to mix on the fly
-Less overall freedom

Sequence and Algorithmic Audio

On the other hand Creating custom algorithmic instruments is difficult but it offers

-Flexibility
-Quick adjustments (temp, harmonic, ect...)

Triggers

Adaptive audio prevents the music being repetitive based on a number of conditions

-Location or area
-Game state and event
-NPC AI

Transitions Between cues

Bad transitions between cues can ruin the players immersion, on the other hand getting it right can deepen the experience

-Cross-fading
-Direct splices
-Seamless transitions (cue to cue)

Audio Engines Solutions

Some game engines have built in solutions and there are a number of middleware audio engine available to the developer although some larger studios have created there own

Audio Engines

‘Off-the-shelf Solutions’

-FMOD
-Wwise
-DirectMusic

Built-in Solutions

-Unity
-Unreal

Audio Engine Considerations

There needs to be a number of considerations when choosing an audio engine, such as

-Platform
-Hardware Limitations

Any Questions?

RUN!

References

- M. Grimshaw, *Game Sound Technology and Player Interaction: Concepts and Developments: Concepts and Developments*. IGI global, 2010.
- B. Houge, “Cell-based music organization in tom clancy’s endwar,” in *Demo at the AIIDE 2012 Workshop on Musical Metacreation*, 2012.
- R. Boulanger and V. Lazzarini, *The Audio Programming Book*. The MIT Press, 2010.
- M. D. Wilde, *Audio Programming for Interactive Games: The Computer Music of Games*. Focal press, 2004.
- J. Craig, “Adaptive audio engine for eeg-based horror game,” in *Audio Engineering Society Convention 142*. Audio Engineering Society, 2017.