

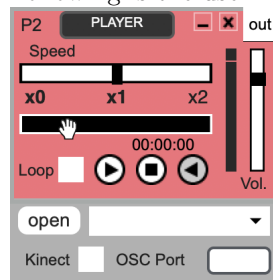
Soundcool's Player Specification

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This is a specification for soundcool's player module.

User interface

Following is the user interface for an player module in Soundcool:



- **Speed, Volume, Loop, Reverse** Each independent controls that are same definition as named. **They are fixed parameter in player module, which means that they don't change with the selection of audio. Other parameters (play/pause, stop, progress bar, time) will be reset after a switch of audio.**
- **Audio Progress Bar:** User can drag to change progress. This is disabled until actual audio is being selected.
When Reverse is *True*, the Audio Progress is left-right mirrored. Note that this means when audio finished playing backward, the progress bar will jump back to rightmost, the "starting point"
- **Time:** Denoting the progression time of the audio. Notice that it doesn't denote actual time, but more of sample rate, so this 'time' will go faster at higher speed.
- **Play/Pause:** After clicking play the play button will become pause button. this is a parameter that will get reset as a change of audio.
- **Stop:** When reverse is *False* Clicking stop will result in audio progress back to 0. When the audio is reversed playing the Stop will goes back to rightmost.

- **Open audio:** There will be a list of audio for your selection. Note that progress bar, play/pause and time will be reset after a new audio get selected. Note that *reverse* is not going to be reset, so if *reverse* is *true*, the new audio will start with rightmost progress bar and max time. (optional) In web audio soundcool, there should be an option of uploading audio in the player module, so that user doesn't need to go back to soundpage to upload sound.

Web Audio Implementation

Attributes

buffer:Float32Array

A `Float32Array` containing discrete audio samples.

startTime:number

Attribute indicating when playback started. `null` if audio isn't played. `AudioContext.currentTime` is used to set the value of this attributes.

offset:number

This attribute is used to store the state of playhead (in seconds) for stateful operations like pause and seek, so play knows where to start playing from.

Methods

load(url)

This method makes a `XMLHttpRequest` and loads decoded samples into a `Float32Array` buffer. Input argument `url` is the URL of the audio to be loaded. Returns a `Promise` object which when resolved returns the length of the audio in seconds. The pending promise will be rejected upon failure to load the audio.

play()

This method instantiates a Web Audio `AudioBufferSourceNode` (ABSN) and starts playback from `offset` seconds. It will internally apply player properties like `loop` and `playbackRate` that were previously set or saved.

stop(resetOffset=true)

Method to stop the playback. `resetOffset`, a boolean, specifies if `offset` should reset to 0.

pause()

This method will pause the playback that can be resumed by calling `play` method.

reverse()

A method to reverse the playback of the audio. The implementation reverses the buffer, re-instantiate ABSN and resumes playback from reversed offset.

seek(seekPosition)

This method is used to jump to a certain duration and continue playback from that point onwards. `seekPosition`, a number in the range `[0, 1]`, specifies what fraction of audio to skip. For example,

- `seekPosition` of 0.0 will start playback from the start of the audio.
- `seekPosition` of 0.5 will start playback from the middle of the audio.
- `seekPosition` of 1.0 will start playback from the end of the audio.

Note: `seekPosition` is independent of playback speed and/or if the buffer is reversed.

set speed:number

This setter will set the playback speed of the player. Speed value is a non-negative float number.

- speed of 1.0 plays the audio at full speed, or 44,100 Hz.
- speed of 0.5 plays the audio at half speed, or 22,050 Hz.
- speed of 2.0 doubles the audio's playback rate to 88,200 Hz.

set loop:boolean

Set `loop` to `true` for audio to repeat indefinitely from start after full audio playback.

Implementation Notes

- Disable operations `play`, `pause`, `seek` and `reverse` when there is no loaded audio.