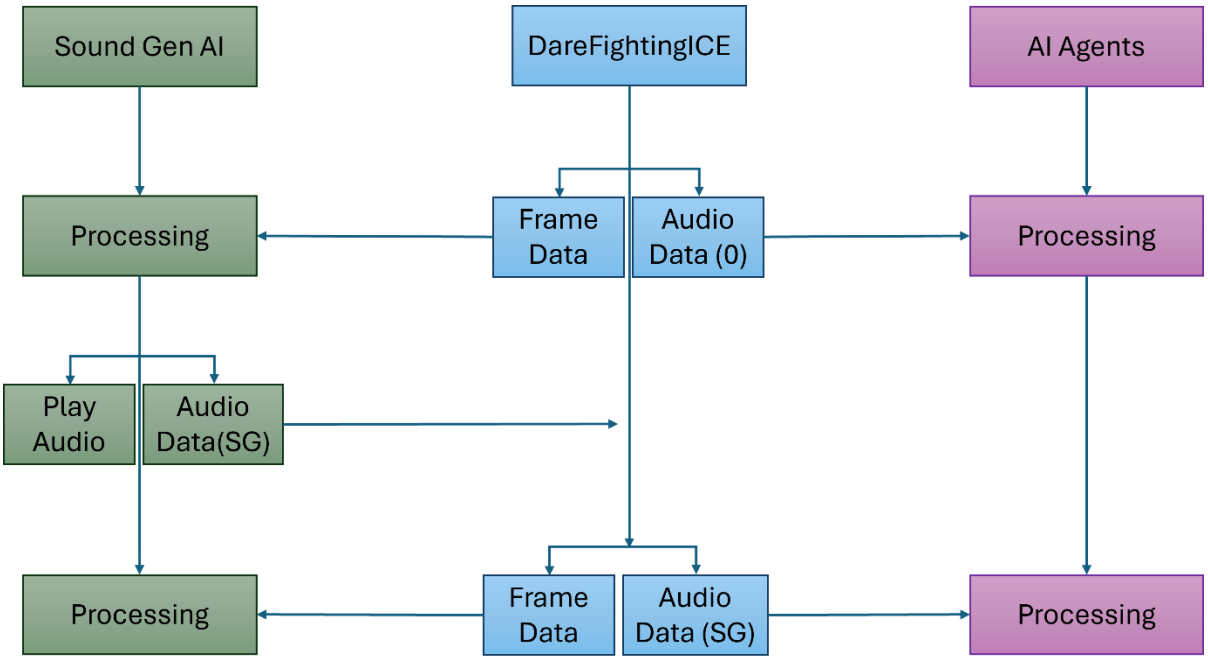
Details of the new Generative Sound AI Interface:



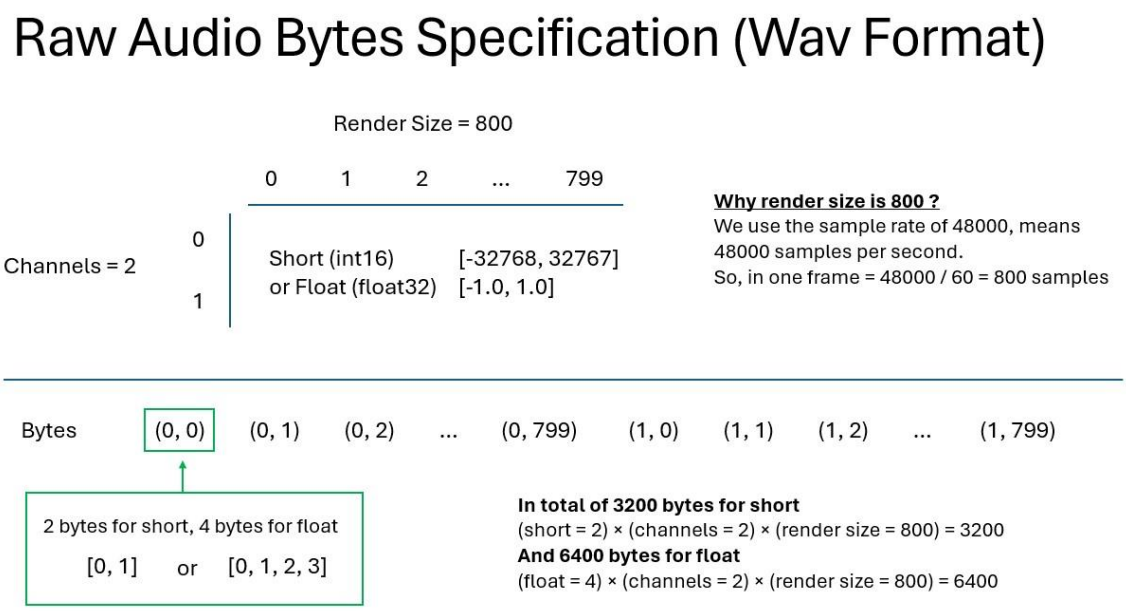
The above figure shows information about the DareFightingICE platform, the game-playing AI agents, and the new sound generative AI Interface. AI agents are the game-playing AI agents in the above figure. At the first frame of every round audio data (0) is sent to the AI agents which is just empty audio data and frame data is sent to the Sound Generative Sound AI (Sound Gen AI). After receiving the frame data from the DareFightingICE, Sound Gen AI plays the sound effects at their location and sends the audio data to the DareFightingICE. In the next frame, the audio data received from Sound Gen AI is sent to the AI agents, so the audio data is 1 frame behind. This process continues till the end of the round.

The sample Sound Gen AI plays the winner sound design of the 2023 DareFightingICE Competition Sound Design Track following the same logic as before. This new interface and the sample Sound Gen AI is provided to give the participants of the DareFightingICE Sound Design Competition an easy way to create a generative or adaptive sound design.

Same as before some simple modifications to the sound design can be made, like just changing the audio files that the Sound Gen AI will be playing to submit a sound design. Although the participants are encouraged to use the new interface to come up with generative or adaptive sound design.

Note: we encourage any new sound generative AI to play the audio as well as sending the audio data to the platform. While doing this is optional, it will help in the evaluation process.

The figure below shows the details of the raw audio bytes data specification used in the Sound Gen AI.



The figure below shows the two ways participants can use to convert audio samples into raw audio bytes for the game playing AI to process.

New Performance Retention Ratio:

Another change starting from the 2024 DareFightingICE Sound Design Competition is the change in the Performance Retention Ratio (PRR) metric that was used in the evaluation of sound designs. This change is to make PRR which is the ratio of performance retained from non-blind-folded play to blind-folded play of a sound design during the evaluation. Previously only the HP difference of both players 1 and 2 was used to measure PRR. Only the HP difference of both players was used to measure PRR, which we believe is not enough to represent the overall performance of the player. Now we introduce a new PRR calculation that includes the win ratio as well as the HP difference for an overall better representation of the performance of players. The win ratio here is the ratio of rounds won by the player out of the total rounds played. Equation (1) shows the new PRR calculation while Eq (3) shows how the old PRR was calculated. The *min* and *max* in (4) are -400 and 400 respectively, due to the initial setting of HP.

$$\mathrm{PRR}_{\mathrm{new}} = \frac{\mathrm{average}(\gamma_{\mathrm{blind}})}{\mathrm{average}(\gamma_{\mathrm{non-blind}})} \tag{1}$$

$$\gamma = winratio \times \delta \tag{2}$$

$$\mathrm{PRR}_{\mathrm{old}} = \frac{\mathrm{average}(\delta_{\mathrm{blind}})}{\mathrm{average}(\delta_{\mathrm{non-blind}})} \tag{3}$$

$$\delta = \frac{d - min}{max - min} \tag{4}$$

$$d = \mathrm{HP}_{\mathrm{Player}} - \mathrm{HP}_{\mathrm{AI}} \tag{5}$$