Report

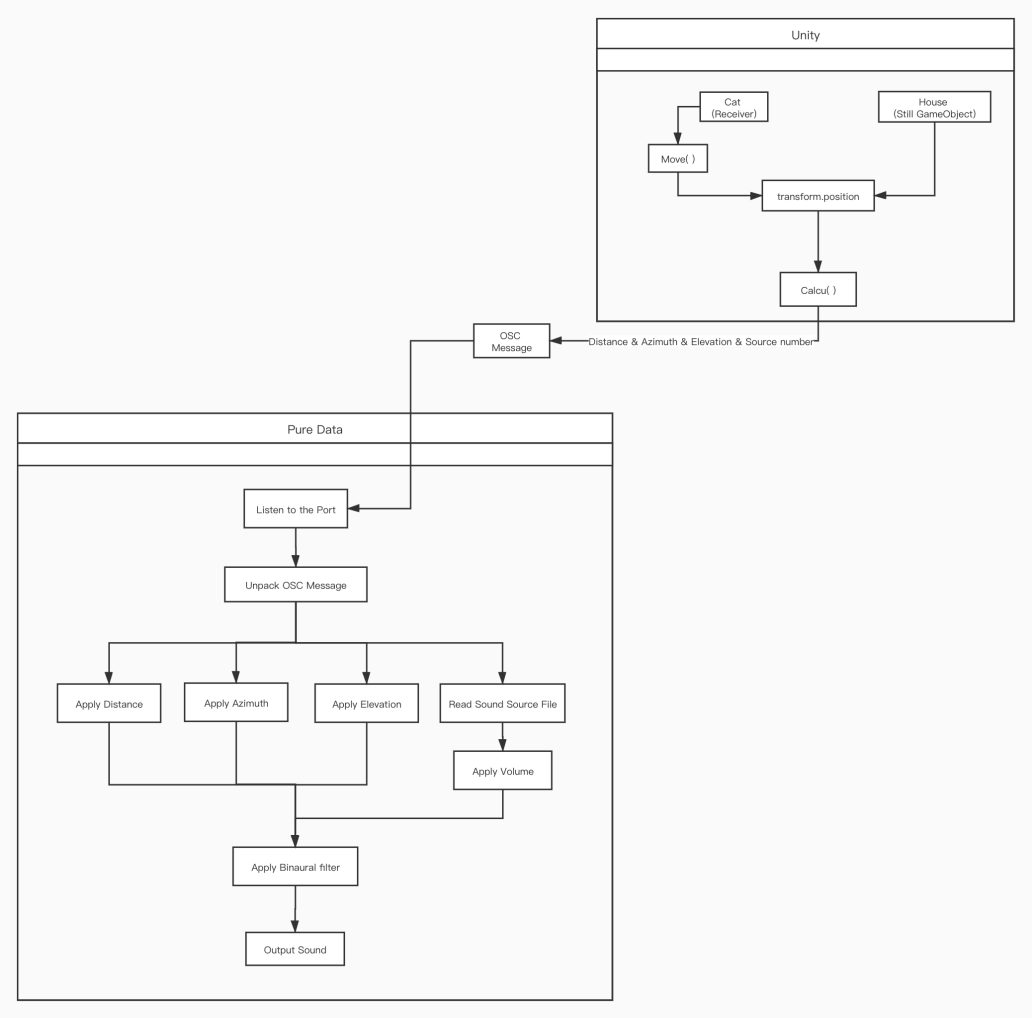
Xiang WEI - IGD IP Paris

Introduction :

We will always hear sounds when we walking outside. And there are always different sounds received between our left and right ears. I want to simulate this scenario so I create a City Explore game where the user can receive different sound effects when approaching to different architectures.

Design & Implementation (method and approach) :

- What are the main features to be developed?
    1. Build a City Scene in Unity.
    2. Control a character to move around the City.
    3. Calculate the distance, azimuth, elevation and send real time OSC message.
    4. Receive OSC message and output binaural sound in Pd file.
- Describe your project (Unity + PureData) as "functional blocks": rectangles with the function names and arrows to show how information flows between the blocks. The reader needs to understand the general architecture of the project, how the functional blocks fit together. Explain in text as well if necessary.



In Unity, we calculate distance, azimuth, elevation based on the GameObject position. Then through assigned port, we deliver the packed OSC message to the Pd file and apply binaural filter on different sound sources. In the end, we output the sound.

Results :

By moving around the cat, I can hear different sounds effects when approaching to different houses. By moving closer to one house, I can receive the sound in larger volume. Also I will receive binaural sound depending on the relative position between the cat and the house. More precisely, if the cat stands on the left side of the center of house, I will hear the sound from the left channel, and if the cat stands on the right side of the house, I will hear the sound from the right channel

Conclusion :

From this project, I have a better understand of how Pure Data works and learnt one way to connect Unity and Pure Data. At the same time, I also have a practical experience with the binaural sound. I did have much fun by playing with it. Yet due to the time limitation, I couldn't import more features. Also I didn't figure out how to apply the binaural filter to an entire sound.

User guide :

1. New a Unity project.
2. Import the Unity Scene.
3. Put the pd file in the root src.
4. Create a folder named "Sounds" inside the Assets folder and put all the sound sources into that folder.
5. Open the pd file and click the DSP button.
6. Run the Unity scene and move the cat by pressing <Up &Down &Left &Right> or <W &S &A &D>.
7. Adjust the volume.

Now you should be able to hear different sounds.