

Urban Sound Tales: The Invisible Landscapes – the Sonic Past of the Two Cities

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ABSTRACT

The Invisible Landscapes is a web-based interactive installation created and hosted on JSPatcher [2], mainly relying on the WebAudio technology to produce sound with effects in real time. Four different audio-visual scenes based on the real life of two Asian cities are prepared into interactive programs, including recorded sound samples, photos and videos. In a web browser, audience is allowed to explore and customize a soundscape by manipulating the provided user interface.

1. CONCEPT

This work aim to explore the interwoven memories between Hong Kong and Taiwan, and it's extension to the present day - observing both regions from different perspectives of time and space. In this platform, participants will control a machine that can travel through time and space. They will look for the sonic clues left in different scenes, discover, connect, and superpose different soundscapes, and create their own stories. The seemingly unrelated sound scenes are indeed a story that spans generations, a story of migration, collision, and fusion. "The invisible landscape" seek to create a de-centralized, immersive "concert" experience within an online interactive installation, and will aim to reconstruct different soundscape, as well as the relationship between the player, instrument, and the audience.

The work is accessible at <https://urbansoundtale.com/>

2. MEDIA

The main body of the work are based on field recording and street photography from the two regions. Through pre-recorded and realtime processing, the implementation of urban environmental noise, and instrumental music, authentic and virtual audio will overlap with the musical narration, blurring the lines between what is real and not. This will create an augmented virtual soundscape - a platform where the virtual world can combine and interact with the real world in various forms.

3. IMPLEMENTATION



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Since our work need to be accessible by audience through a web browser and a URI, we used JSPatcher, a visual programming language (VPL) to design the entire interactive program on the web. These programs and the related resource files are uploaded to a public GitHub repository. Finally, including the resource files location and display options are encoded into four URIs for each scene. By entering these URIs in the browser, audience will open a "runtime" version of JSPatcher in which programs are loaded automatically, displayed in the full-page size and cannot be edited.

3.1 Scene 1



Figure 1: Scene 1 of the installation

Fig 1 shows the user interface of the first scene. The background is blended between 7 pictures that slightly changes over time. A matrix of colored toggles sets on or off the replay of corresponding samples which are loaded by the HTML `<audio>` tags. On the right, users will find a global volume controller and four colored sliders. These sliders can be used to change globally the playback rate, the pitch-shifting amount for the source audio and two pitch-shifting amounts for the harmonizer. The pitch-shifter and an output limiter are implemented using the standard library of the FAUST language, compiled in real time in the browser to AudioWorklet nodes. At the bottom, a text is displayed, picked randomly from a set of questions. We also prepared a preset selector for users to quickly switch between soundscapes. All the user-changeable parameters are encoded to a string displayed below the user interface. Users are asked to share the string with us, by collecting these data, we are

trying to understand better their choice.

3.2 Scene 2

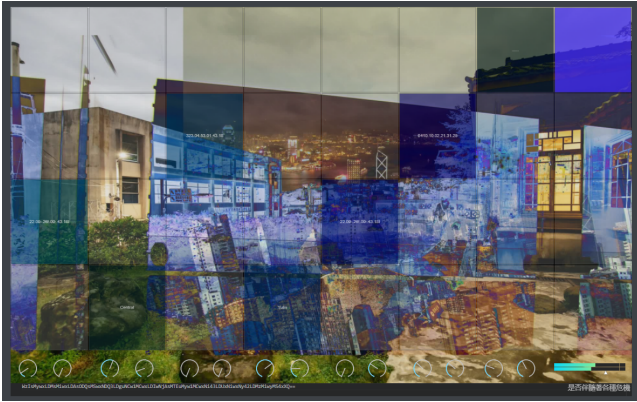


Figure 2: Scene 2 of the installation

Similarly to the Scene 1, scene 2 (Figure 2) has a set of samples replaying with effects. However, there are some differences on the matrix which becomes a preset selector (the last column) and seven vertical selectors choosing between three samples. Each column of samples outputs the original sound and a processed one using a peak (notch) filter. Its frequency and gain parameters can be changed using two knobs at the bottom.

3.3 Scene 3

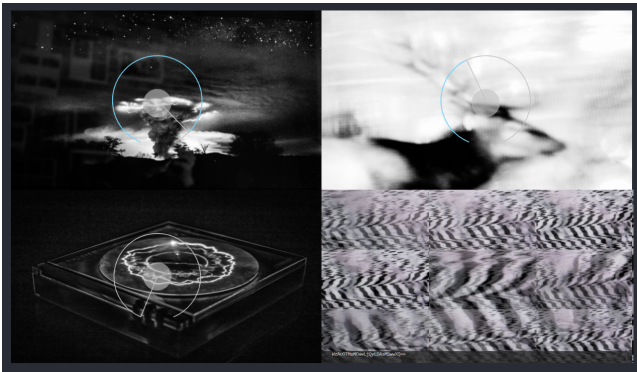


Figure 3: Scene 3 of the installation

Apart from the bottom right image composed by different opacity and size of a same picture, other three cells have two sound-and image modes switchable using the bottom at the center of each cell. the knob changes the volume of the sound. (Figure 3)

3.4 Scene 4

The program in the scene 4 (Figure 4) is more complex, involving video replay and realtime synthesizers. Nine videos are replayed randomly, with a random speed and time position, following a periodic trigger that also send MIDI note messages to the synthesizers written in a Faust [1] patcher. The Faust patcher generates a 16-voice additive synthesizers with envelopes, frequency modulators and amplitude mod-



Figure 4: Scene 4 of the installation

ulators, accepting 4 different timbres controlled by the four columns on the user interface.

4. TECHNICAL REQUIREMENTS

We recommend to use the latest Chrome browser on a computer with a good CPU, stereo load-speakers and a large high-resolution screen. Touch screen will be a good plus.

5. BIOGRAPHIES

5.1 Tak-Cheung Hui

HUI, Tak-Cheung is a Hong Kong-born composer, currently an Assistant Professor of Music at the Tunghai University. Hui started his formal education of music at Hong Kong Academy for Performing Arts and completed his masters' degree in Composition at Conservatorium van Amsterdam under the supervision of Richard Ayres, Willem Jeths, and Wim Henderickx. Since 2015, he was given a fellowship from Boston University Center for New Music to pursue a Doctoral degree under the supervision of Alex Mincek and Joshua Fineberg. In 2017-18, he pursued a further degree at IRCAM Cursus under the support of Boston University Research Grants. Over the course of his career, Hui has been awarded numerous prizes include 1st prize in 38th Irino Prize, Chaosflöte Commission Competition 2019, Flex Ensemble Commission Competition 2017, Leibniz Harmonien International Composition Competition 2016, ACC International Composition Competition 2016 and Atlas Ensemble Composition Competition 2014.

5.2 Shihong Ren

Shihong Ren is a composer/researcher in computer music, currently at Shanghai Conservatory of Music, Jean Monnet University, a member of the Shanghai Key Laboratory for Music Acoustics, a member of the ECLLA research laboratory, a member of WIMMICS research group, common to INRIA and to the I3S Laboratory (CNRS). He entered the Conservatoire national supérieur musique et danse de Lyon in 2011 in the electroacoustic composition class, and graduated in 2016 as the youngest DNSPM and Master Degree owner in the composition major. He got the Artist Diploma in 2018, and followed the cursus of composition in IRCAM in the same year. He attended an internship at GRAME-CNCM (Lyon, France) in 2019.

6. ACKNOWLEDGMENTS

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7. REFERENCES

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