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MMI 522 Procedural Sound Design

Term Project Report

Introduction

In this document the main parts of the project have been explained separately. Additionally, I have present some of my personal opinions about every part. The report has been also included some screenshot of Pure Data patches as well.

As asked on the project assignment the project includes mainly 6 separated patches which are:

sbutton~

shutter~

printer~

fcharge~

flash~

cambody~

I have also added an extra patch which named **app_simulator** which is also contains sub patches to control main functionalities of the project. I am going to start discussion on app_simulator by continuing main patches as listed.

App Simulator

app_simulator.pd

As I have stated I have added an extra patch which is named **app_simulator** for simulation intuitive user interface which is easy to understand and makes usage as simple as possible. I have mainly used canvas object for UI elements with different colors and sizes. For some of the rounded parts such as lens, I have used bangs as a visual element. For starting application, I have added a bang object on top of the camera body which is for intuitive usage that simulates “Shoot” button. I have also added a horizontal slider to control paper count which at the left of the simulated camera body. The maximum value of slider is 10 as the Polaroid camera which has capacity of 10 papers(films). The top of the slider is starting point and the bottom of the slider is equal to maximum capacity. At the top of the camera body I have add bang object next

to light object to simulate flash events. At the top of this band I have added toggle button to control flash status (enable/disable). At the left bottom corner, I have added another bang object to simulate alarm of the empty paper case. For alarm sound I have used modified version of the patch that I have designed for the second homework (microwave example).

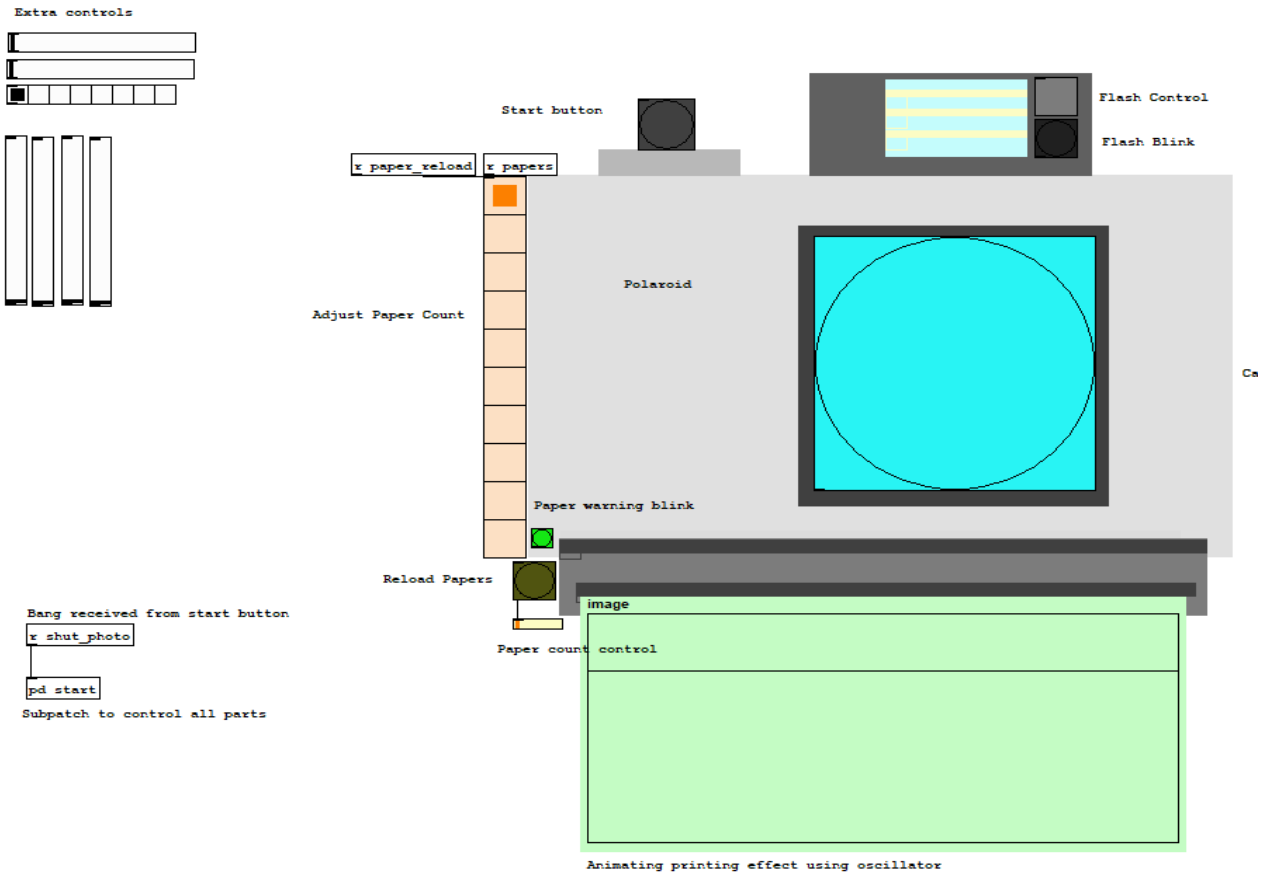

Image 1: User Interface designed to enable more intuitive usage

The above image is the screenshot of the main patch. There is also an image part which is displaying as green region. This is part is for simulating a printing event by means of simple oscillator signal. Detailed information has given in the upcoming paragraphs. Flash bang blinking in case of the enabled flash toggle. If there is no paper on the device alarm sound is starting and paper bang blinking red alert. At every shoot the value of papers is decreasing by one so does the slider. The main bang at the center also blinking in time of the shutter event to create shutter effect on UI.

sbutton~.pd

Shoot button is the button to shoot the image which is mechanically is a simple push button. The working mechanism is bases on the spring or elastic part that pushes the button head back when it is pushed and released. The sound is mainly cause of the button head is hitting the bottom of the cave and top of the hole while releasing. It is mainly generating two sound effects one for push which is because of a finger pressing another one while releasing because of the spring mechanism. I have used a simple vline object and message box to send different

frequency signals one after another to generate these two sounds sequence. I have also added noise signal with a bandpass filter to generate a more realistic and pleasant final result.

shutter~.pd

As I have searched for leaf shutter, I have learned that there are other types of shutters. As suggested on project document leaf shutter has taken as a reference for a shutter event. Leaf shutter is bases on the mechanism which is working on by means of spring. It is not hard to discriminate two strikes on every shoot. On every strike by means of the spring and the material that the shutter composed the low frequency sound effect is generating. It is like closing and opening of the small door which is made by means of very thin material.

printer~.pd

Because printing occurs as paper sliding out by means of DC motor rotation in the inside of the camera which is closed box, I have tried to generate printing sound from motor example as suggested on project document. I have also listened some example printing sounds on the internet and decided to modify some parameters such as volume, brush effect, stator value values to get more pleasant printing sound effect. As I have listened some examples, I have noticed that the printing sound is something happening not linearly, it is mainly having two phases on most cameras. Approximately at the half of the printing the intensity of the sound is changing. Additionally, there is the sound of the opening of paper door which is playing before printing sound effect. Furthermore, I have added oscillator signaling on the image canvas to simulate printing effect while printing of the image. It simply starts oscillator with the value of 550 frequency and it sets the value of the oscillator to 0 at the end of printing which is animating image sliding out of the camera effect on UI.

Because of the whole process starts by checking the paper count I have implemented alarm part in general, not specific to the printing function.

fcharge~.pd

The sound of flash charging is taking place in between of button push and photo shutting. It is occurring because of on every shoot the capacitor is loading to the full capacity and releasing all capacity to create flash effect. As far as I am concerned on most of the cameras it is a simple signaling sound which generating by increasing pitch rate linearly or parabolically. Considering these characteristics, I have designed a simple patch to generate this sound effect. The patch receives number values, namely 1 for starting charging sound effect and 0 for stopping the sound effect in case of shutter sound started. The signal starting at low frequency and increasing to high frequency in a short period of time. In my patch it is starting from 2500 and increasing to 4500 in short time. I am stopping this sound effect by sending 0 to the inlet of the patch when the shutter starts.

flash~.pd

Flash sound occurs as a result of the flash light turns of to generate bright light by means of discharging of capacitor. It lasts only milliseconds to discharge all capacity of the capacitor and at the end flashlight turns off. As far as I know, on some cameras It happens multiple times on one shoot (I do not know the reason). I have modeled the patch which is designed based on only one strike of flashlight which is consists of only turning on and turning off phases. It is actually like sound effect of the push button which is consists of exactly two parts. Low frequencies have been used to generate flash like strike a sound effect with vline and adding extra noise makes sound more to like light on and off events. As I have listened some examples, I have noticed that because of all sounds plays at the same time during photo shooting it is hard to discriminate flash sound effect in a combined sound. Thus, I have not exactly sure to say that the patch generates flash sound which is realistic enough.

Conclusion

In conclusion, I have enjoyed doing this term project which can be seen the gamification (or visualization) that I have added as an additional part to the project. Despite generating not realistic and pleasant Polaroid camera sound effects, I think within such a short time by using only simple pd elements it is pleasing to generate such final result. The most critical problem was that I have get used to use some pd objects and tried to finish all parts by using only these objects. As a result, I had got in trouble time to time.

Thankfully Instructor have provided all class materials that I have benefited a lot while doing this project. Furthermore, I have also benefited previous Homeworks, mostly homework 3 in which I have also designed an intuitive UI for pedestrian crossing.

The course has triggered the way that I have listening some sounds around and thinking these sounds as a physical wave that we have dismantle the sounds for every example in class.

I hope I will use the knowledge that I have learned from this course in my projects in near future.

I have also thanks to our instructor for being and teaching so patiently and trying to teach as much as possible. The most of the theoretical and scientific knowledge behind the occurrences of the simple sounds were very interesting.

To sum up I have really enjoyed by enrolling in this course.