

ML Final Project

1. I have made an interactive drum machine using C++ OpenFrameworks, this drum machine can be totally controlled by the user via a gui button system. This application communicates via OSC with wekinator to manipulate the tempo of the rhythm. Wekinator is receiving it's inputs (400 pixels) from the the webcam where it has been trained to increase the tempo of the drum machine as I take my clothes off (the webcam is too low res to see anything don't worry). The idea is to have an instrument that can model some of the most primal human responses, that of seduction & heart rate.
2. My project was more trying to embody the idea of an instrument that could mimic human responses. Holly Herndon I know has been interested by the idea in her work.
3. Due to the bespoke nature of this application I used a naive bayes classification algorithm for it's fast running and fast training times, I found with this this algorithm the model was less likely to exhibit erratic behaviour whilst In the process of taking off an item of clothes and therefore changing classes, Naive babes provided a smoother transition. As mentioned before, for the drum machine itself I used openFrameworks with the add-on's ofxOSC & ofxMaxim, the former for communication with Wekinator and the latter for it's sound capabilities (keeping tempo & playing samples). The input program I used was written in processing, and is a slightly modified version of that which can be found in the Wekinator example files, I've modified the amount of data that is sent from 100 pixels to 400 to allow for more reliability. Since the algorithm I'm using is so fast to train and run, this increase in inputs did not effect the performance at all.
4. While the quality of the sound coming from the drum machine may be a little crude (ofxMaxim only takes 16 bit WAV's) I believe the concept has been implemented successfully. Since the model has been trained with pixel data, & due to the difficulties of getting people to undress in-front of my webcam, the model is fairly bespoke. With more training the model would be able to correctly classify regardless of skin-tone, colour of clothing, background etc. Increasing the resolution of the picture also would assist in classifying if there were more variation in training data. Since I envisioned this being used in a live music performance, these kinds of variables would already be pre-conceived and therefore could be trained for to fit a specific environment etc.
5. As mentioned before the input program was from the Wekinator examples, but slightly modified, all other code is my own with the exception of libraries.
6. The processing sketch can just be run as normal, the OF project once compiled with run. Once running you can draw the drum pattern you would like to hear, however only 75% of these will play each cycle making it semi-generative. Run the wekinator file which has been trained with 400 inputs & produces 1 output of 3 classes. Only wekinator and The drum machine OSC program need to be running.