FYP Progress Meeting

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1 Summary of Progress

The concept of the project was initially to enable users to intuitively work out how to navigate a set of parameters to draw art to the screen.

The art is based on pen-plotter work by artist *Darrell Viner* a relatively unknown artist but one of the first British computer artists. His work is held in the Henry Moore and V&A museums.

Exploring multiple parameters is equivalent to exploring a multi-dimensional feature space so information was gathered on how existing solutions achieved this, most seemed to include dimensional reduction in some sense or another. Some chose to visualise subspaces and others chose to show slices of the space. These were both interesting but the slicing approach made more sense for the purpose of this project because it didn't remove any part of the feature space, this can be seen as allowing the user the change any parameter at will.

Control schemes were considered too, the idea being that a user should be able to understand how to operate the program in the context of home use. For this reason custom controllers were out of the question despite being more suited (e.g. knobs that controlled each parameter).

Generating the art also posed challenges, this involved a review of Viner's work to see what techniques he may have used and to translate them into modern computing (his work was completed in `FORTRAN`).

Part of this was conceiving of a way to generate a 'landscape' that could be used to inform the generation of the art. This involved creating tools that can be combined to generate points that conform to a coherent geometry. An example of this would be using Perlin noise in combination with an approximate rounding function using additive synthesis to create a 'semi-quantised' noise. Using Perlin noise makes sense here because of it's ability to be 'natural' looking but also procedural based on a set of parameters and a seed, allowing for reproducibility of states.
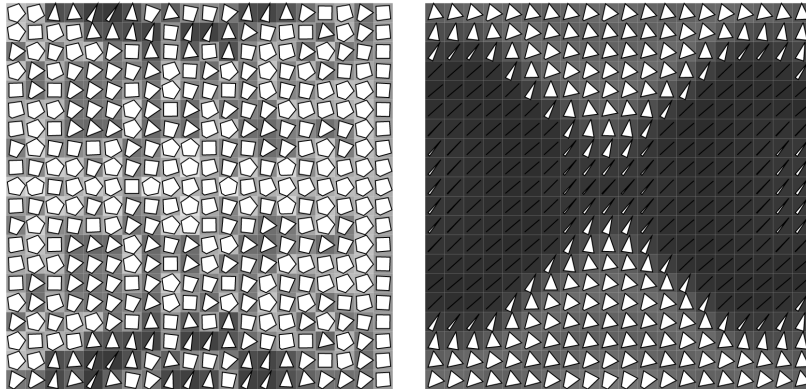
Also to help with navigation a concept for generating musical intervals (ratios of pitches) was developed, this has yet to be fully implemented but a demo shows that it may be useful in helping users locate themselves within the set of parameters they are able to control. Further this would add an element to the art that is 'non-Viner', so to speak, and perhaps makes the work feel more 'in dialogue' with the work than directly copying, as well as making it more engaging for users.

A system was devised to recall previous states of the visuals using a tree data structure, whilst not complete it allows for saving and loading in histories as json files and a visualisation of the tree that saved the states you are in. This allows users to recall any state from a session and save and share states with others. This system

saves the state every 100 frames and if the user wants to access somewhere between those states it can linearly interpolate between them.
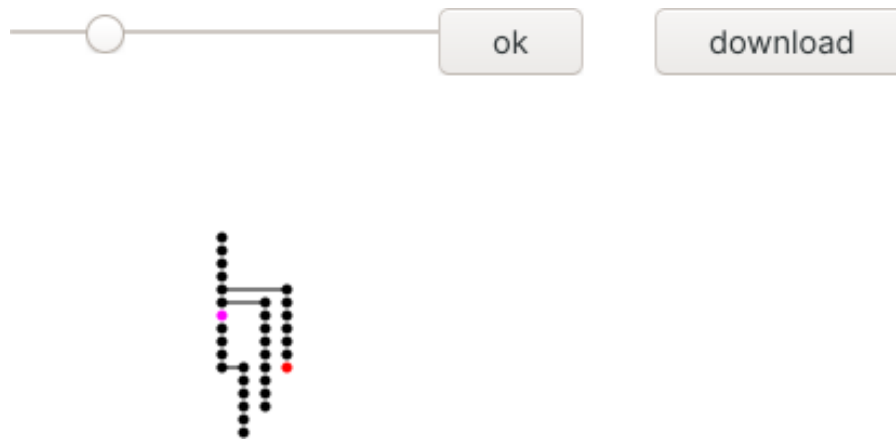

Figure 1: Current interface: (subject to change), red is current position and pink is 'cursor' to recall position when 'ok' is pressed. Ideally you would just click on the 'map'

2 Todo

The history system needs to be completed first, and is being worked on currently, this would allow work to be started on general UI polishing.

The user interface needs to have ways to change parameters and explain key bindings to the user. Ultimately this would ideally be able to be hidden totally so that the user can see only the grid.

There should be some way to save images from the screen to the user's computer too, perhaps as a stretch to allow videos to be generated, but the tools available to do this would need to be explored more.

I would also like to perhaps look at a method to show a large 'map' that shows everything a user has seen in a session, perhaps only in one branch of the tree history. This would need to be considered a bit more.

The music part needs to be worked on, I am collecting recordings to try and build some samples for this. All of the component parts are there, all that needs to be done is integration and implementation of the generative music part.

Overall the graphics themselves are almost there but could do with more polish, it's a bit indeterminate but things like creating more flexible offsets for each point's calculation to allow for a less constrained set of images.

Perhaps also this could be tested with some users remotely to see if the goals of understanding how users can control the application work, but this might not fit to formal user testing methods as it's an art project.