Week 3 Meeting

2357351G - MSci Half Project

What I've done this week

- Created separate GitHub repository for dissertation.

- Read Hall of Fame papers and marking scheme for MSci project.

- Read and summarised *Differentiable Digital Signal Processing (2020)*.

- Started a summary document of different approaches to neural synthesis.

- Added some more potential datasets and evaluation methods to relevant documents.

- Watched/coded alongside YouTube tutorial series *Audio Signal Processing for Machine Learning*.

- Read/summarised *Differentiable Signal Processing With Black-Box Audio Effects (2021)*.

- More thought about direction of project.

Development of Research Question

- (Deep) virtual analogue modelling.
- DALL-E for sound generation:
  - Applying audio effects to a signal using natural language.
  - Generating ‘one-shot’ samples using natural language.
  - Manipulation of ideas generated from these models using controls/adverbs?
- Acoustic extraction:
  - Lots of demos of audio effects (guitar pedals, plugins etc) available online. DDSP paper showed that reverb could be extracted from a violin (over many recordings) and transferred to another audio signal. Could there be a way to make a model which could accurately extract the 'effect' from a dry/affected signal comparison without the signal being one-to-one? Would be cool to be able to quickly try out effects or mimic effects on your own recordings/instruments. Need to think about:
    - Dataset to use (YouTube A/B comparisons, SPICE models, anything else?).
    - Inference time (if required online).
    - If user would be able to control the effect at all?

Questions

- Overall marking is done by the supervisor and an assigned reader. Will this just be John and Jonathan, or will someone else also mark the paper?

- If there is lots of potential model training, are there facilities at the school that can be used (GPUs etc)?

Plan for next week

- Try to narrow project ideas further.

- Finish *Audio Signal Processing for Machine Learning* tutorial series.

- Read/summarise *DrumGAN: Synthesis of Drum Sounds With Timbral Feature Conditioning Using Generative Adversarial Networks (2022).*

- Read/summarise *Zero-Shot Text-to-Image Generation (2021)* (DALL-E 2 paper).

- Look into unsupervised tagging of free-to-use sample pack datasets.

- Make music.

Where I am in schedule

- Still in initial planning/background research phase.
- Would be good to narrow down the project idea in the next week to do more focussed reading.