# Week 4 Meeting

2357351G - MSci Half Project

What I've done this week

- Debugging and verifying my current model and data. Found audio preprocessing issue which was affecting embeddings.
- Ran a longer training session - input embeddings had better structure, but VAE was still poor at reconstruction.
- Performed some analysis on input and reconstruction vector values.
- Started implementing a simple Spectrogram VAE, but had some issues with reconstructed spectrogram shape.
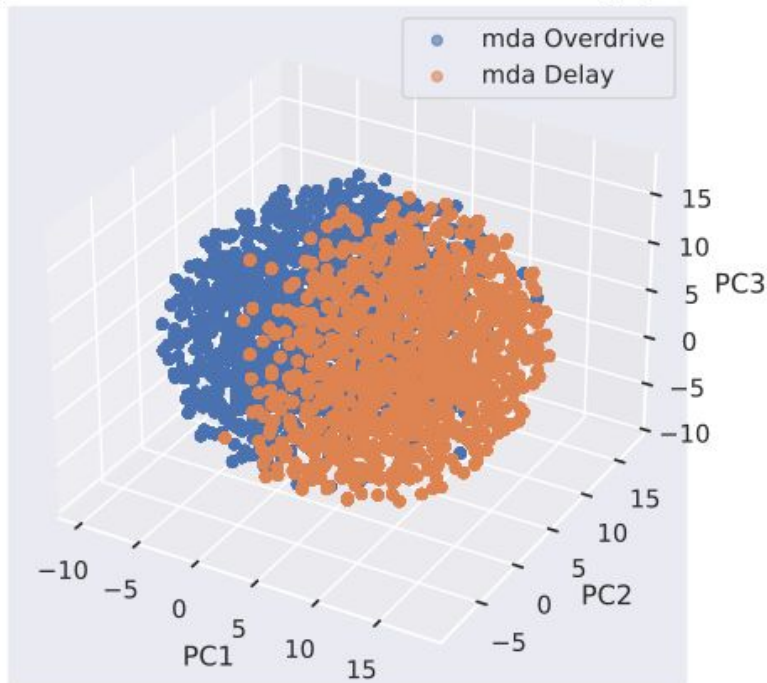
2D UMAP difference in audio embeddings (2FX)

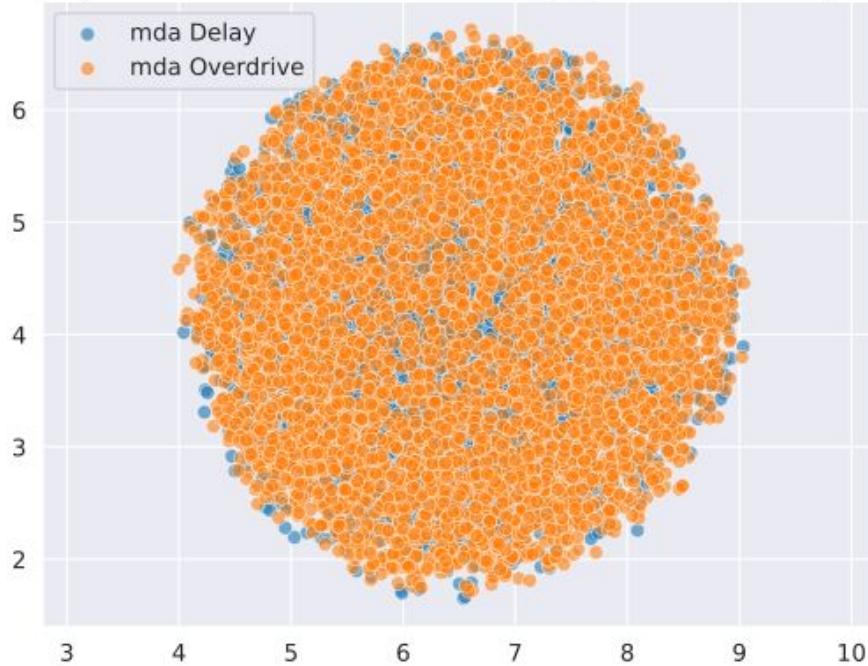UMAP projection of the difference in feature embeddings (50000 samples)
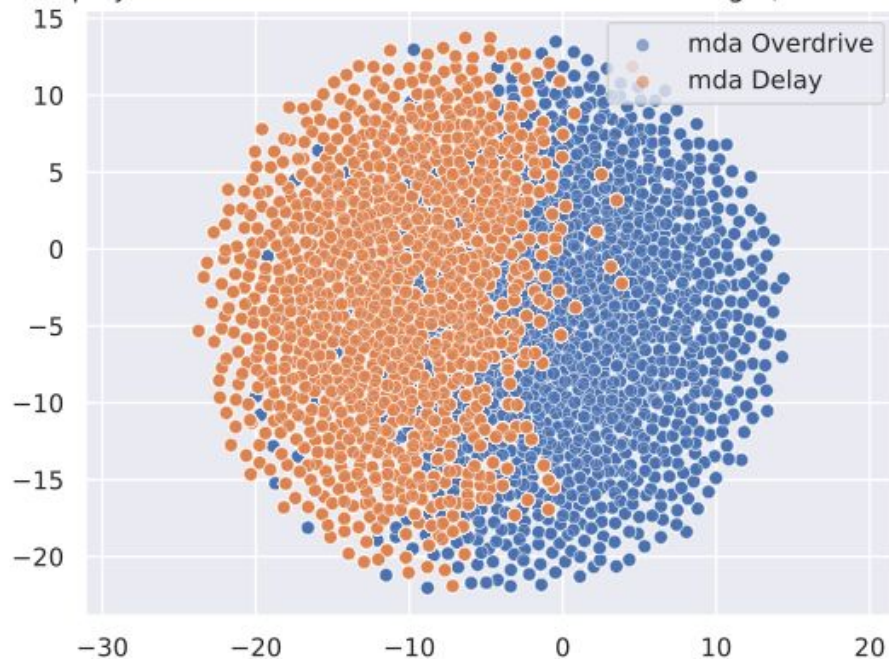
3D UMAP difference in audio embeddings (2FX)

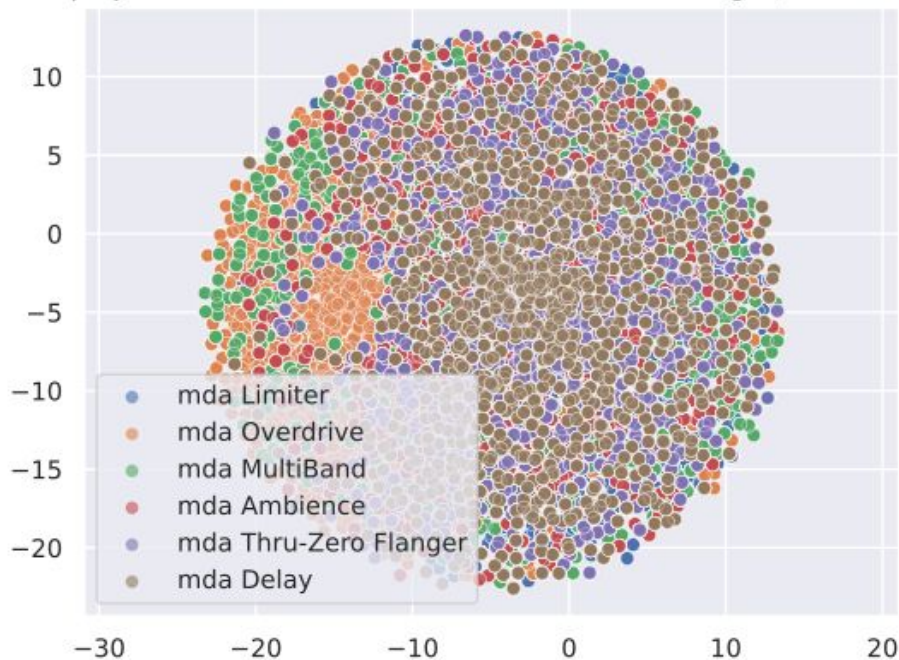3D UMAP projection of the difference in feature embeddings (50000 samples)

UMAP learned latent space (2FX)

UMAP projection of the learned embeddings (5000 datapoints per effect)
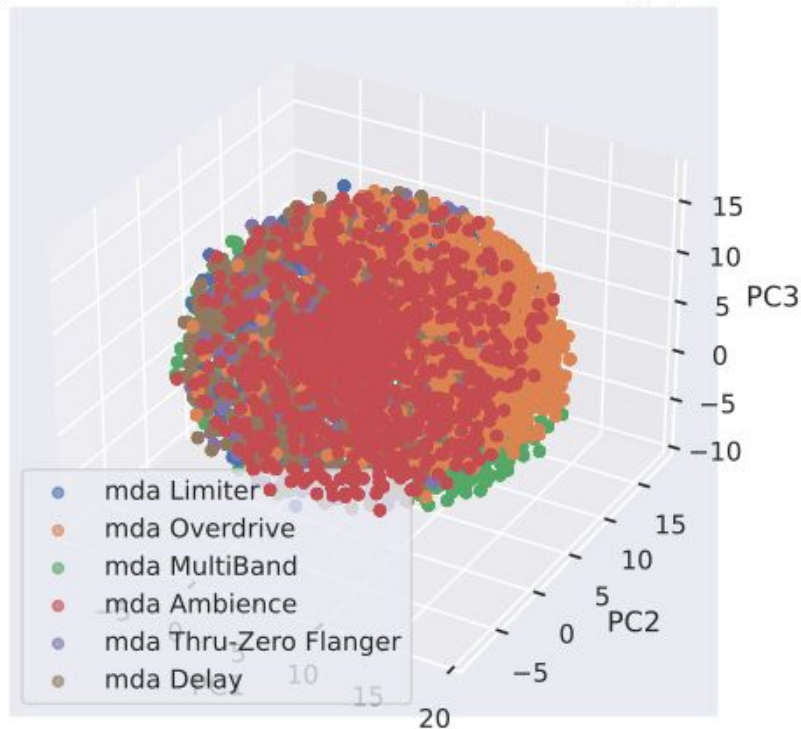
2D UMAP difference in audio embeddings (6FX)

UMAP projection of the difference in feature embeddings (50000 samples)

Legend:
- mda Limiter
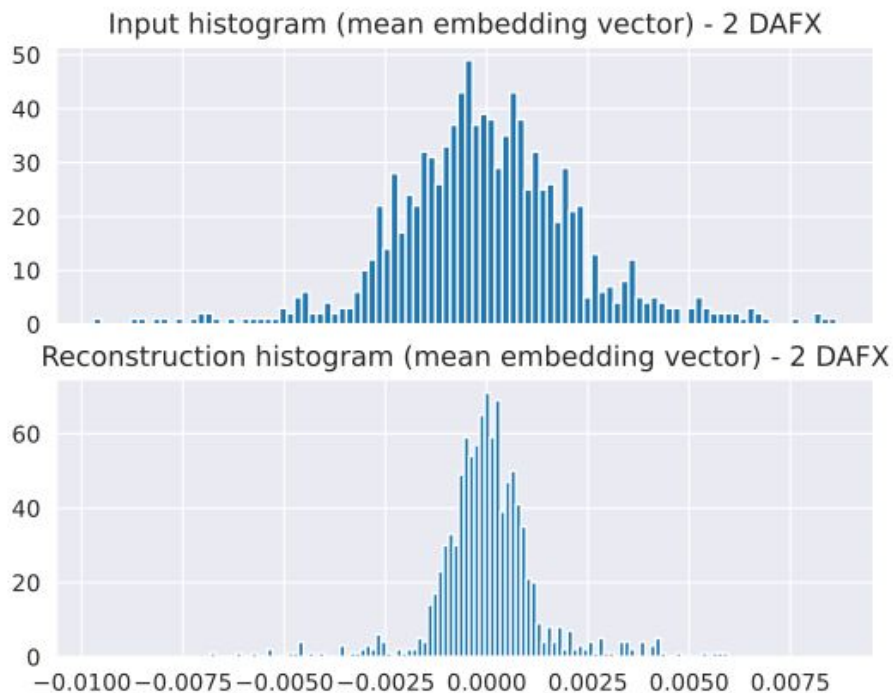- mda Overdrive
- mda MultiBand
- mda Ambience
- mda Thru-Zero Flanger
- mda Delay

3D UMAP difference in audio embeddings (6FX)

3D UMAP projection of the difference in feature embeddings (50000 samples)

Legend:
- mda Limiter
- mda Overdrive
- mda MultiBand
- mda Ambience
- mda Thru-Zero Flanger
- mda Delay

Comparison of values for mean input and reconstruction vectors

Questions

- Grade/feedback for interim report has not appeared on Moodle/SOCS website - would it be possible to double check the submission?
- I think I should have clarified the intention of creating a simplified VAE for spectrograms:
    - This spectrogram VAE should encode a spectrogram and be able to decode from the latent space to a reconstructed spectrogram.
    - Is the idea that this VAE would be pretrained on the dataset (with both effected and uneffected audio with a number of DAFX), then the encoder part used to replace the pretrained audio encoder that I am currently using?
    - Would there be any benefit in the above, rather than just training the encoder part end-to-end alongside the VAE in the model?

Plan for next week

- Finish implementing spectrogram VAE and train.

- Continue debugging model.

Where I am in schedule

- Not much progress from last week, continuing to debug the model to improve the performance of the VAE.