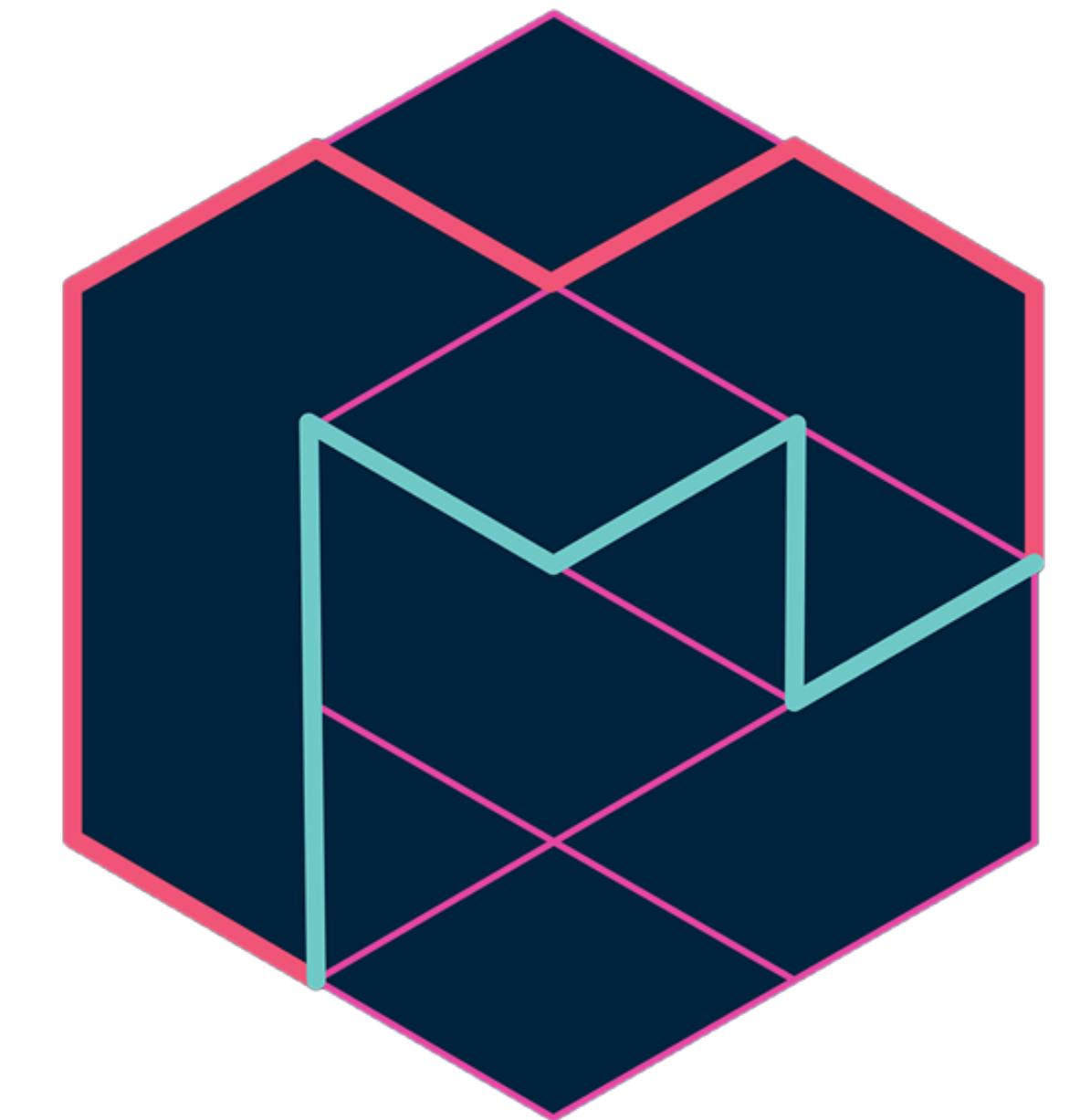


# **Lab 5: Magenta / Neural tools**

**Luke Dzwonczyk | October 14, 2024**

# Magenta

- Google team focused on creative applications of neural networks
- Browser demos, VST plugin, Colab notebooks: <https://magenta.tensorflow.org/>

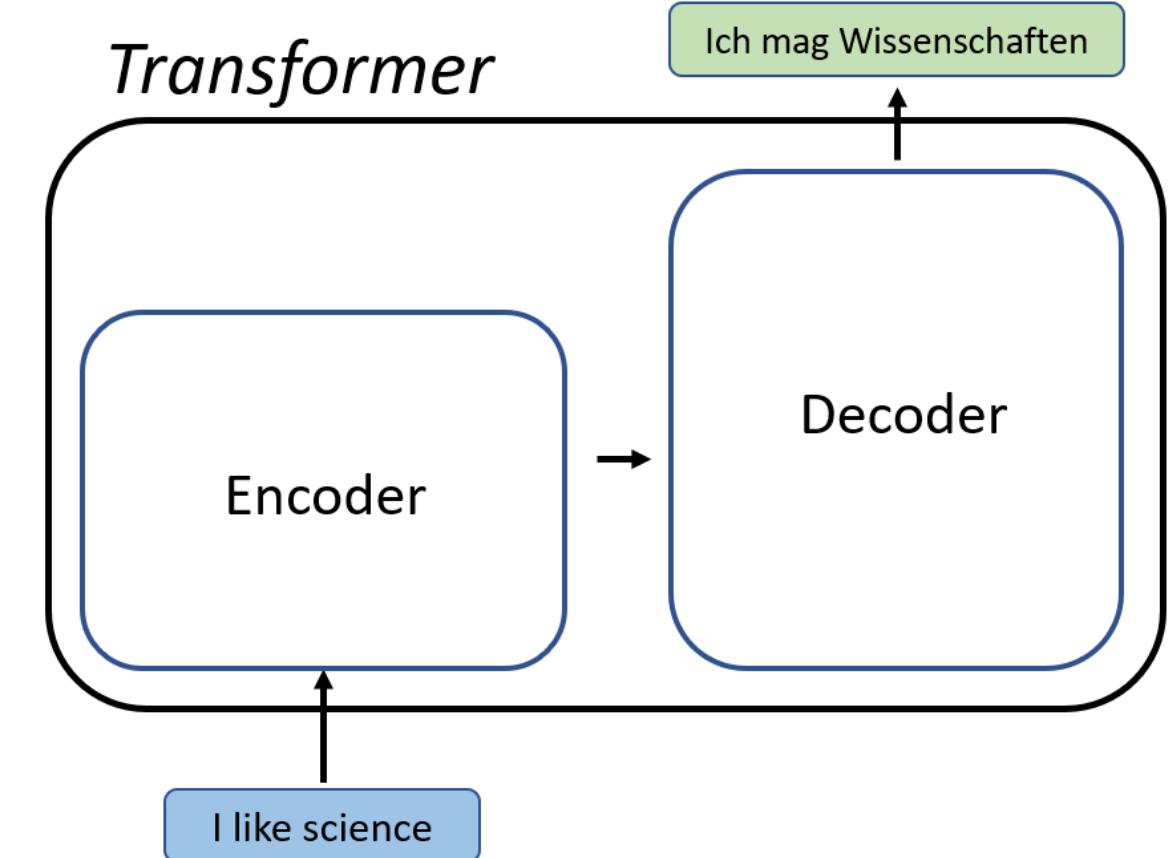


magenta

# Magenta

## Music Transcription with Transformers

- Audio -> MIDI
- The `ismir2021` model transcribes piano only, with note velocities.  
The `mt3` model transcribes multiple simultaneous instruments, but without velocities.
- Try it out here: [https://colab.research.google.com/github/magenta/mt3/blob/main/mt3/colab/music transcription with transformers.ipynb#scrollTo=s2s3JAvBAgFB](https://colab.research.google.com/github/magenta/mt3/blob/main/mt3/colab/music_transcription_with_transformers.ipynb#scrollTo=s2s3JAvBAgFB)
- Architecture: Transformer model

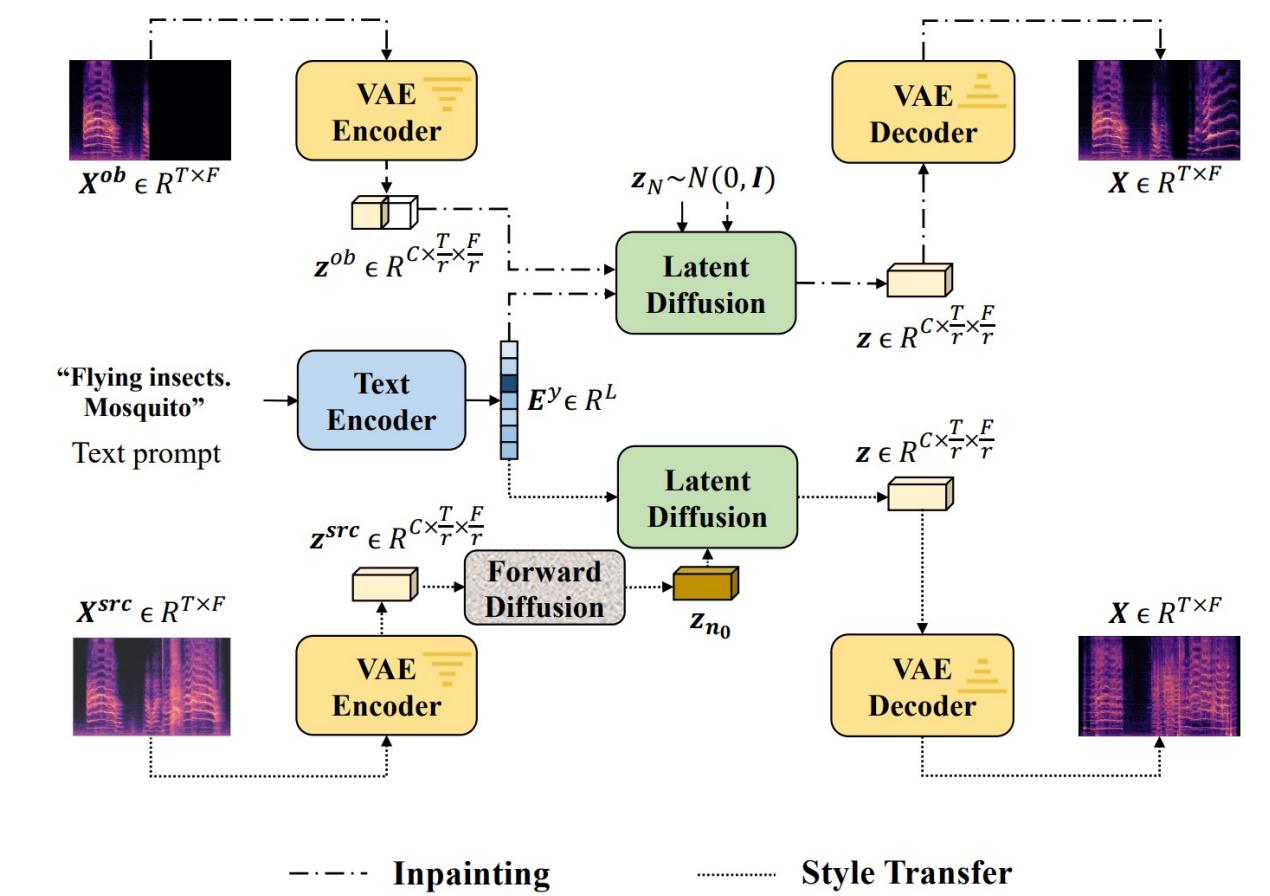
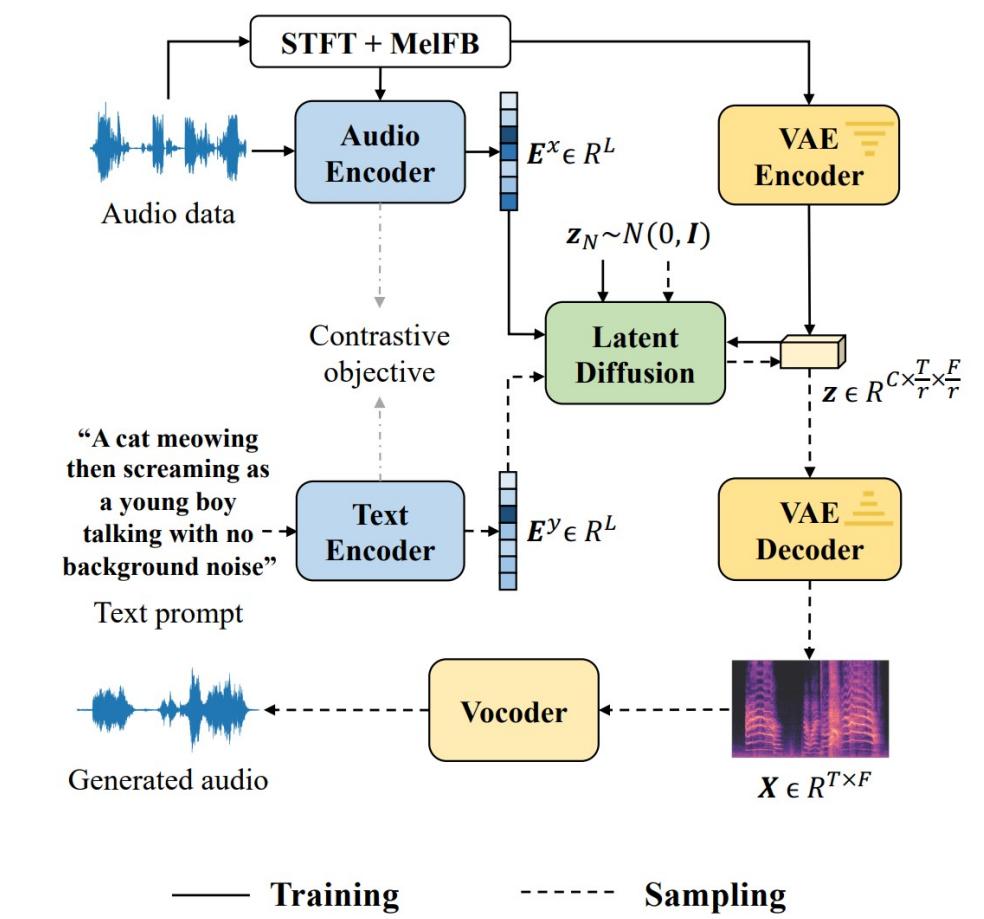


# MusicGen

- Text -> audio
- Can input audio as well
- Try it here: <https://huggingface.co/spaces/facebook/MusicGen>
- Architecture: transformer
- More info: <https://audiocraft.metademolab.com/>

# AudioLDM

- Text -> audio
- Try it here: <https://huggingface.co/spaces/haoheliu/audioldm-text-to-audio-generation>
- Architecture: Diffusion model
- More info: <https://audioldm.github.io/>



# MidiComposer

- Generates MIDI given instruments, key, BPM, time signature
- Architecture: transformer
- More info: <https://github.com/SkyTNT/midi-model>

# Image to music

- Image -> Text -> Audio
- Try it here: <https://huggingface.co/spaces/fffiloni/image-to-music-v2>
- Text -> Image: <https://huggingface.co/spaces/stabilityai/stable-diffusion-3-medium>

# Further reading

- Dan Deacon and Magenta: <https://magenta.tensorflow.org/dandeacon-ipreshow>
- What are Transformers (Machine Learning Model?): [https://www.youtube.com/watch?v=ZXiruGOCn9s&ab\\_channel=IBMTechology](https://www.youtube.com/watch?v=ZXiruGOCn9s&ab_channel=IBMTechology)
- Illustrated Guide to Transformers Neural Network: A step by step explanation: [https://www.youtube.com/watch?v=4Bdc55j80I8&t=89s&ab\\_channel=TheA.I.Hacker-MichaelPhi](https://www.youtube.com/watch?v=4Bdc55j80I8&t=89s&ab_channel=TheA.I.Hacker-MichaelPhi)