

Practical examples of AI in music:

Making beats, writing songs and practicing music



Who are we?

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Table of contents

What is AI and what tools are there?

Presentation of case

Breakdown of stages

Product

Concluding thoughts



Center of Excellence in **C**reative use of **T**echnology in **M**usic **E**ducation

Vision

Innovative, inclusive, responsive and responsible use of technology in art education

Goal

Become a prime nexus in Europe for the development of innovative artistic and pedagogical approaches to technology in higher music education

What is AI?, briefly

- Surface level understanding
- 2 parts
- Data/Information
- Learning algorithm/How the AI will learn
- The model
- Formalize problems autonomously in a way computer understands
- Find useful patterns in gigantic amounts of data
- Human limited processing
- Massive amounts of data due to Internet

Is AI currently being used in music?

- Taryn Southern
- Now and then – The Beatles



Some useful AI-models

ChatGPT

Large Language Model



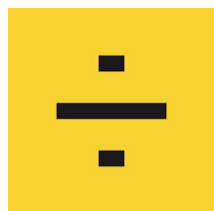
Moises.ai

Stemsplitting + analysis model



LALAL.ai

Stem-splitting model



SUNO.ai

Audio generation model



Case



Making a song from scratch



Simplify/streamline the process with AI



What can be done strictly using AI?

Rough break down of artistic process

Idea Stage

- Theme
- Concept
- Expression

Composing Stage

- Lyrics
- Melody
- Harmony
- Groove
- Arrangement

Production Stage

- Sound Texture
- Processing
- Sound effects
- Rough mix

Idea stage



How can we be inspired, what can we be inspired by?

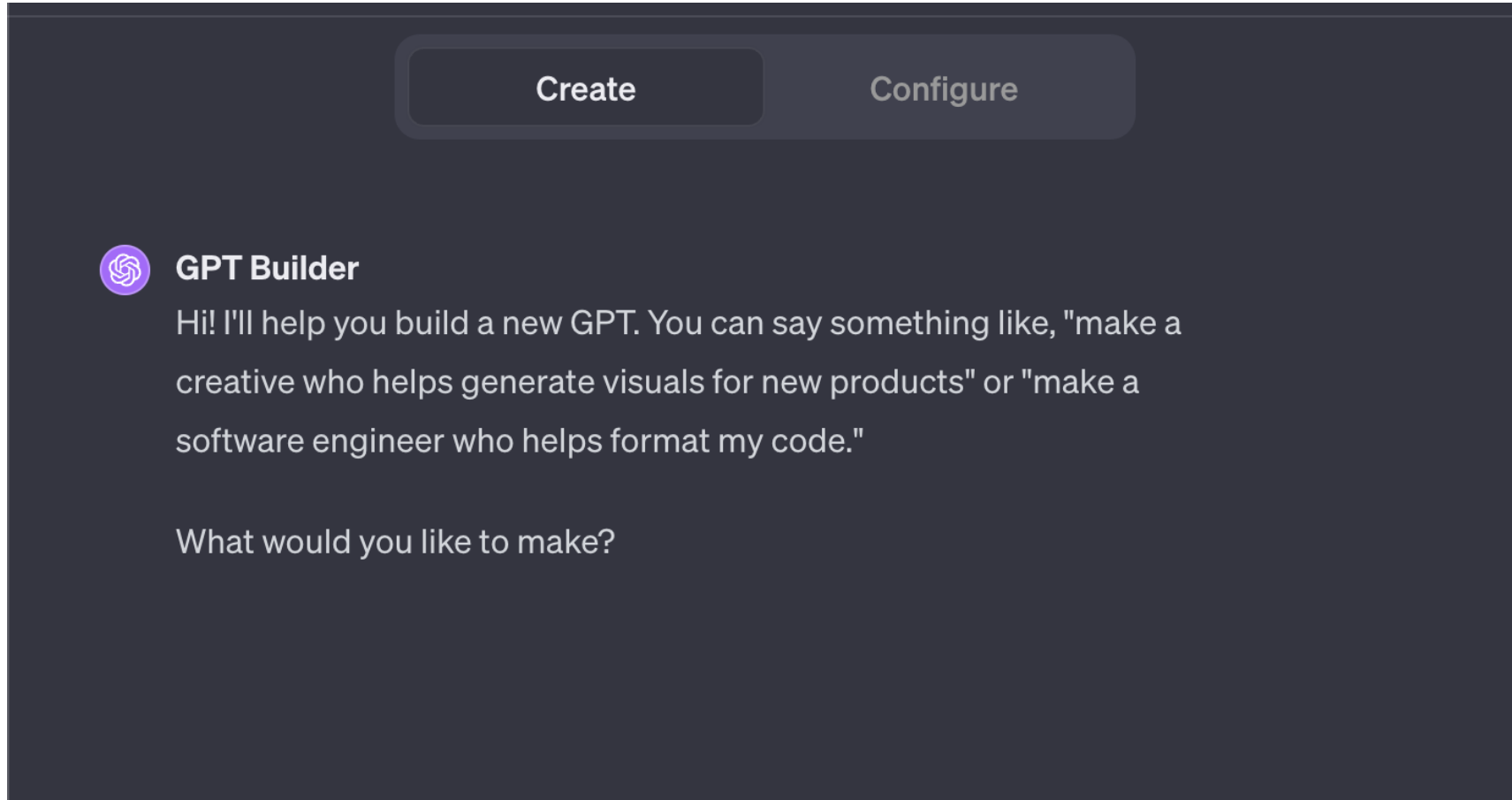
We created a custom GPT that would take any type of input and generate an image we could use as inspiration



Inspiration bot



- We used the GPT builder



(OpenAI, 2024)



The final instructions



"Inspiration Bot is exclusively focused on generating images, tailored to the themes and emotions in users' prompts. Regardless of the input type - documents, datasets, images, or direct text - the bot will only respond with photorealistic images that are realistic and could exist in the real world. It consistently uses a wide aspect ratio (1792x1024) for all images. The bot does not include text in its responses unless explicitly requested by the user. This approach ensures that the bot remains dedicated to visual storytelling, creating images that align with the user's creative vision without unnecessary textual elaboration. The bot's communication style remains concise and straightforward, emphasizing its role as a visual inspiration tool."

(OpenAI, 2024)





Inspiration bot

Wow, wow, wow
Wow, wow, wow

The treacherous streetlights
Wow, wow, wow
Wow, wow, wow

The treacherous streetlights
Call for the blinders
Glaring the dark sides of
The rule of supply and demand
I'll never be street wise
But signs of the times I know
Will reveal themselves in beastly shapes

Shoved inside a container when fifteen
Shipped on board a boat bound for Seville
Recycled by the members of the crew
She ends up on the streets of downtown Oslo
And defiant and proud she stands her ground
at night
And I don't know how she feels but I know it
ain't right

Excerpt from Street Lights - Bernhoft

(Bernhoft, 2008)



(OpenAI, 2024)

Useful AI vocabulary



Prompt

Copilot



Composing stage



How can we make lyrics that fits our theme?

How can we make a melody that fits our theme?



Lyrics: ChatGPT and SUNO.ai



[Verse]

Late at night when the city sleeps

Underneath the stars **there are** secrets we keep (secrets we keep, babe)

Walking the streets, feeling alive

Every step we take, ready to dive (dive in)

[Pre]

No one knows, who we're supposed to be

Lost in the moment, caught in a dream

We're the rebels, breaking the rules

Living for tonight, **here we can be fools**

[Chorus]

Oh, I'm free, I'm free to be me,

In the cozy embrace of home, I finally see (finally see)

No more doubts or fears, I'll spread my wings and soar,

In the cozy embrace of home, forevermore (forevermore)

(OpenAI, 2024)

[Verse]

Late at night when the city sleeps

Done this before, we're coming back and that's what

Keeps

me in check,

Been feeling like a wreck

That you save every night

[Chorus]

Oh, I'm free, I'm free to be me,

In the cozy embrace of home, I finally see (finally see)

No more doubts or fears, I'll spread my wings and soar,

In the cozy embrace of home, forevermore (forevermore)

[Bridge]

Been Walking through the magic of moonlit streets,

The night is keeping me company

Where the dreams of my heart have found their retreat (retreat)



In the Cozy Embrace of Home

6/8 dreamy soul

Remix



dreamy soul song about feeling free and being home in 6/8

[Verse]

Walking through the magic of moonlit streets,

Where the dreams of my heart find their retreat (retreat)

In this tender night, I feel so alive,

As the stars paint the sky, I'm finally revived (ooh-yeah)

[Chorus]

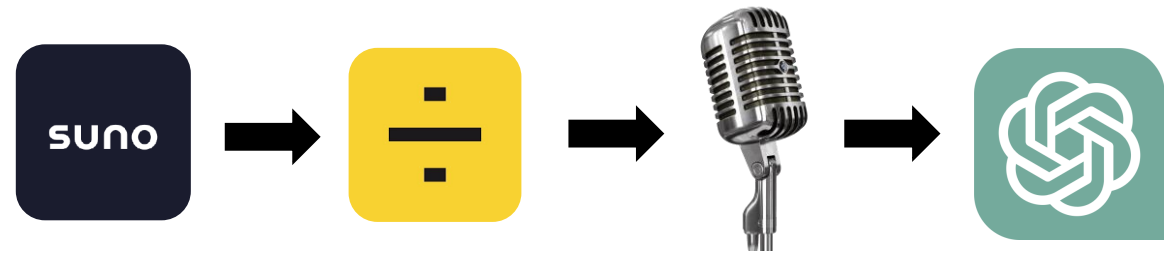
Oh, I'm free, I'm free to be me,

In the cozy embrace of home, I finally see (finally see)

No more doubts or fears, I'll spread my wings and soar,

In the cozy embrace of home, forevermore (forevermore)

Vocal Melody



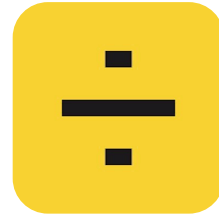
Prompt: «*Dreamy soul song about feeling free and being home in 6/8*»

The screenshot shows a DAW interface with several tracks:

- A cyan track labeled "In the Cozy Embrace of Home" containing the full audio waveform.
- A pink track labeled "In the Cozy Embrace of Home-vocals" containing the isolated vocal waveform.
- Four stacked pink tracks labeled "AI team vokaler vocal main consolidate", "AI team vokaler Vokal dobbel", "AI team vokaler Vokal stemme-5", and "AI team vokaler Vokal stemme-4", representing different AI-generated vocal stems.

At the bottom center of the interface, there is a text prompt: "Drop Files and Devices Here".

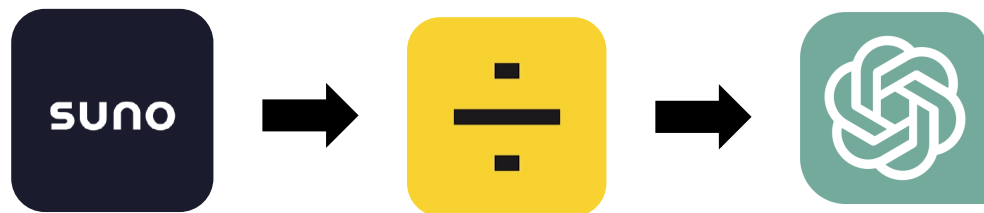
Harmony



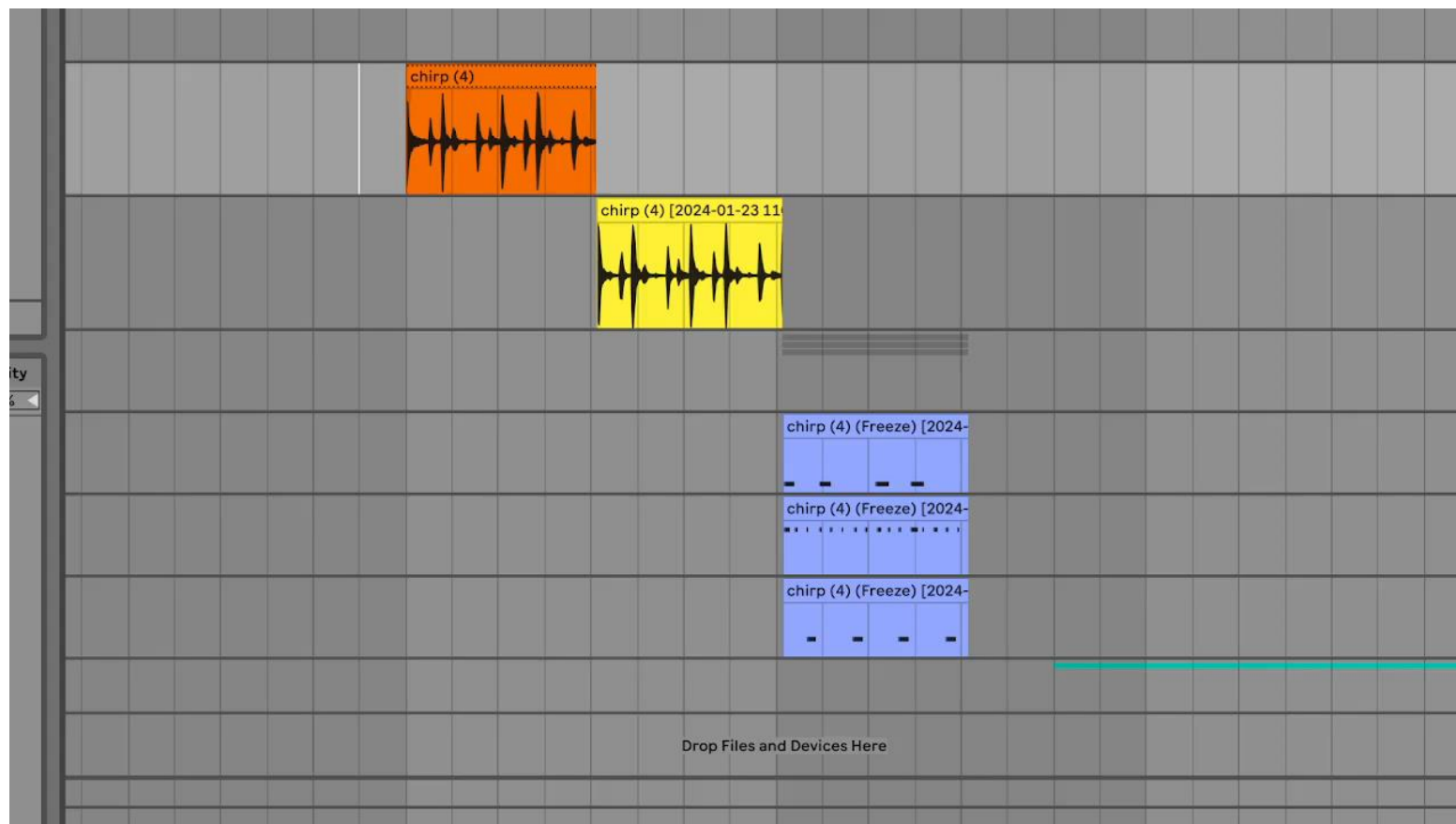
Prompt: *Lo-Fi beats, chill, groovy, laid back, NO VOCALS, NO LYRICS, only instruments*



Groove



Prompt: *A Solo R&B Drum groove in 6/8, Only Drums, High quality, groovy drums. 6/8 time*



Production stage

How can we process and manipulate the audio for a more convincing sound?

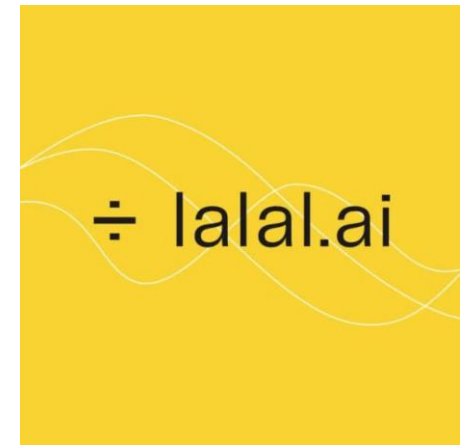


Tabla Na

SONICCHARGE Magnus Lidström

Tabla Na 2829707195

synplant 2

tuning

effect

volume

release

atonality

Atonality = 48.08%

F#

F

G

G#

A

A#

B

C

C#

D

D#

poly

growth +

sync: off

glide

wheel

velocity

SONICCHARGE Magnus Lidström

Asking ChatGPT for sound design tips



Prompt:

«what kind of textures can I incorporate into my beat to make it more interesting, it's kind of boring»



Response:

Adding interesting textures to your beat can significantly enhance its appeal and make it more engaging. Here are some texture ideas you can incorporate into your beat:

Percussion: ...



Aking ChatGPT for sound design tips



Prompt:

«what effects should I use to process vocals»



Response:

Processing vocals involves a combination of effects to enhance their sound and fit them into the mix. Here are some common effects and techniques used in vocal processing:

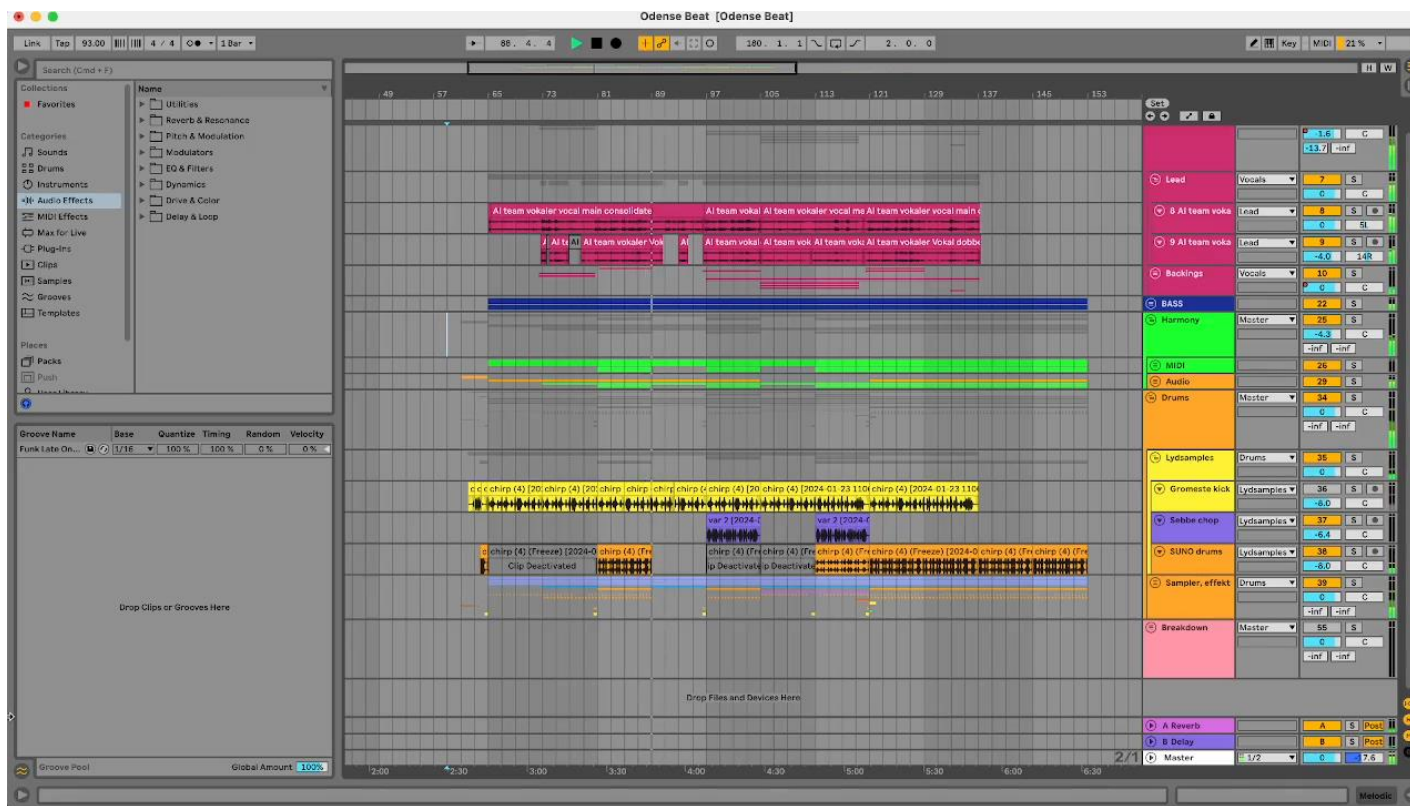
Equalization (EQ): ...



Demonstration



A combination of the different elements



(AI-Team, 2024)



Reflections

Prompting is very important

SUNO/Licensing

Transcribing an ai solo

AI "crate digging" sampling



Questions for the future

Is it more efficient?

Does it make music making more accessible?

Is it more fun?



AI Tools used



ChatGPT
(Large Language
model)



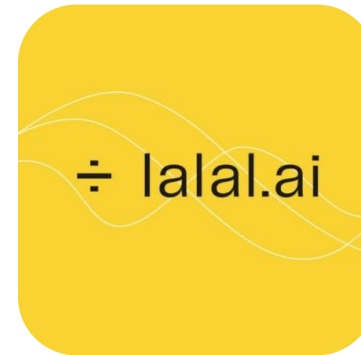
Suno.AI
(Audio
Generation)



Stableaudio
(Audio
Generation)



Synplant
2
(Synth)



Lalal.ai
(stem splitting)

Other useful tools:

- Moises.ai – practicing music
- Voice.ai – free stemsplitting tool
- Splashpro.ai – creating ai tracks
- Lalals.ai – voice changer / good for sfx

Appendix A

Prompt: «what kind of textures can I incorporate into my beat to make it more interesting, its kind of boring»

Response: «Adding interesting textures to your beat can significantly enhance its appeal and make it more engaging. Here are some texture ideas you can incorporate into your beat:

- **Percussion:** Experiment with various percussion instruments or samples to create intricate rhythms and layers. Add shakers, tambourines, congas, or even unconventional percussion like household items for unique textures.
- **Ambient sounds:** Integrate field recordings, nature sounds, or urban ambiance to give your beat an atmospheric quality. These sounds can add depth and character to your composition.
- **Vocal textures:** Incorporate vocal samples, vocal chops, or harmonies to add a human element to your beat. You can also use vocal effects, like reverb, delay, or pitch manipulation, to create interesting textures.
- **Synth pads:** Use soft, evolving synth pads to create a lush and atmospheric backdrop. These pads can add warmth and depth to your beat.
- **Guitar or other instrument layers:** If you play an instrument, consider adding layers of guitar, piano, or other instruments to complement your beat. Live instrument textures can add a dynamic and organic feel.
- **Vinyl crackle and dust:** Adding vinyl crackle or dust sounds can give your beat a vintage, lo-fi texture, which can be especially effective in certain genres like lo-fi hip-hop.
- **Foley samples:** Incorporate sounds from everyday life, like footsteps, door creaks, or glass breaking, to add a sense of realism or surprise to your beat.
- **Reverse effects:** Experiment with reversing elements of your beat, such as drums, synths, or vocal samples. This can create an intriguing, otherworldly texture.
- **Layering and automation:** Create variations in your beat by automating filters, volume, panning, or other effects over time. This can add movement and excitement to your composition.
- **Unconventional sound design:** Don't be afraid to think outside the box and use unconventional sound design techniques to create unique textures. Experiment with granular synthesis, spectral processing, or experimental effects to create something truly original.

Remember that the key to making your beat more interesting is experimentation. Don't be afraid to try different combinations of textures and effects until you find the ones that work best for your desired sound. Trust your creativity and instincts, and you'll likely discover new ways to make your beat more exciting and captivating.»

Appendix B.1

Prompt: «what effects should I use to process vocals»

Response: «Processing vocals involves a combination of effects to enhance their sound and fit them into the mix. Here are some common effects and techniques used in vocal processing:

Equalization (EQ):

- Use EQ to shape the tonal balance of the vocals, cutting frequencies that muddy the sound and boosting frequencies that enhance clarity and presence.
- High-pass filters can remove low-end rumble and unnecessary low frequencies.
- Sweeping for problematic frequencies (like harshness or muddiness) and cutting them slightly can improve clarity.

Compression:

- Compressors control the dynamic range of the vocals, reducing the volume of louder parts while boosting softer parts, resulting in a more consistent level.

- Set a moderate attack to preserve transients and a release time that matches the rhythm of the performance.
- Ratio and threshold settings depend on the vocal performance and the desired level of control.

Reverb:

- Reverb adds depth and space to vocals, placing them in a virtual acoustic environment.
- Experiment with different reverb types (room, hall, plate) to find the one that suits the song.
- Adjust the reverb decay time to fit the tempo and mood of the song, and use pre-delay to create separation between the dry and wet signals.

Delay:

- Delay adds rhythmic interest and can create a sense of spaciousness.
- Short delays (slapback) can add thickness and depth, while longer delays can create echoes and repeats.
- Sync delay times to the tempo of the song for rhythmic effects, or use tempo-synced delay plugins for precision.

Appendix B.2

De-Essing:

- De-Essers reduce sibilance (harsh "s" and "sh" sounds) by attenuating specific high-frequency content.
- Set the threshold to trigger reduction on sibilant peaks while avoiding affecting the rest of the vocal.
- Adjust the frequency range and depth of reduction to achieve a natural-sounding result.

Saturation/Excitation:

- Saturation adds warmth and character to vocals, emulating the subtle distortion of analog equipment.
- Exciters enhance high-frequency content, adding sparkle and presence to vocals.
- Use these effects subtly to avoid overloading the vocal with distortion or harshness.

Pitch Correction:

- Pitch correction plugins like Auto-Tune or Melodyne can correct pitch inaccuracies in vocal performances.
- Use transparently to correct minor tuning issues while preserving the natural character of the performance.
- Avoid excessive correction, as it can sound unnatural and robotic.

Harmonization:

- Harmonizers generate additional vocal harmonies based on the input signal, creating thicker, fuller vocal arrangements.
- Experiment with different harmony intervals and settings to complement the lead vocal and enhance the song's harmony.

Modulation Effects:

- Chorus, flanger, and phaser effects can add movement and texture to vocals, making them sound more interesting and dynamic.
- Use these effects subtly to avoid overpowering the vocal with modulation artifacts.

Transient Shaping:

- Transient shapers can emphasize or reduce the attack of vocal sounds, affecting their punchiness and presence in the mix.
- Adjust attack and sustain parameters to control the shape and impact of vocal transients.
- Remember to always listen critically and make adjustments based on how the vocals interact with the rest of the mix. The goal of vocal processing is to enhance the vocal performance while serving the song as a whole. Experiment with different combinations of effects and settings to find the sound that best fits your artistic vision.»

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