

Music Makers

Sound Altering Techniques



Campers learn about recording hardware and tools for mixing. Test audio effects and hear how we can alter sounds. Once familiar with commonly used audio filter effects, play a soundboard of audio with a variety of filter effects and have campers guess the effect. Continue by showing the filter creation website presets and customizable filter maker. Campers can make their own filter and save it to show the next day.

Materials

- Device with internet access

Safety Considerations

- Age appropriate internet supervision

Keywords & Concepts

Audio mixing is the process of combining multitrack recordings into a final mono, stereo or surround sound project.

- During combination, the relative volumes levels of the tracks are adjusted and balanced through various processes

Six elements to audio mixing:

- 1) **Balance**: volume level relationship between musical elements
- 2) **Frequency Range**: having all audible frequencies properly represented
 - Requires a keen ear and understanding of the instruments
- 3) **Panorama**: placing a musical element in the sound field
 - An easy way to describe this is where does the instrument come from upon playback
 - Think of listening to a song with headphones and hearing something that appears to go from your right ear to your left ear - achieved by panning
- 4) **Dimension**: adding ambience to a musical element. This is where reverb, delay and other effects are added
 - In the music industry this is referred to as making a mix wetter. A dry mix is the raw recording without any other effects.
- 5) **Dynamics**: controlling the volume envelope of an individual track or the entire mix
 - Keeps all of the sounds at a pleasant and appropriate level
- 6) **Interest**: making the mix special.
 - Making the mix more interesting and creating more of an emotional response

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Effects

Reverb / Delay

- Mimics environments and their reflections of sound. Delay is when those reflections take so long to come back to the listener that it sounds like a copy of the original sound. Delay = echo
- Impulse response = how sound engineers model environments. By taking the response to a quick noise (ex. clap) in an acoustic environment we can model the reflections off of the walls to recreate this natural reverb

Distortion / Overdrive

- Increases saturation of the waveform, causing clipping of the sound which can sound blown out. Overdrive is a more natural boosting of the sound which depends on the input, whereas regular distortion will saturate even the soft parts of the waveform evenly.

EQ - High pass / Low pass

- EQ (or equalization) in music is the process of changing the balance of different frequency components in an audio signal. Our ears can detect a huge range of frequencies—roughly 20 Hz to 20 kHz. Each element of your mix has energy in different parts of that range.
- High pass (or low cut) EQ cuts the bass frequencies and leaves the high frequencies.
- Low pass (or high cut) EQ cuts the high frequencies and leaves the bass frequencies

Vibrato

- Vibrato is a pulsating sound effect produced by slight and rapid changes in the pitch (frequency) of a note. It has been used for centuries as a technique for adding expression and coloration to music, and it is characterized by two parameters, depth (the amount of pitch variation) and speed (how quickly the pitch is varied).
- True vibrato is most often achieved either manually or mechanically.

Tremolo

- Tremolo is a trembling or “shuddering” effect produced by slight and rapid changes in the volume (amplitude) of a note. It, too, has existed for hundreds of years as a musical technique, but for our purposes it is a much more recent technical innovation used in amplifier design. It is characterized by similarly labeled parameters, including depth (the amount of volume variation) and speed (how quickly fluctuations in volume are varied; also variously labeled as rate or intensity).
- Vibrato deals with change in pitch. Tremolo deals with change in volume.

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Effects

Chorus

- Copies the sound and causes a pitch difference in the copies to thicken the sound and create the effect of multiple voices.
- This processor achieves the effect by taking an audio signal and mixing it with one or more delayed, pitch-modulated copies of itself.

Phaser

- The sound waveform is split into two, and the phase (position of the waveform) is changed for one of the copies. This phase difference sweeps through the sound creating a 'wobbly' synthetic sound using a low-frequency oscillator and some fancy math.

Reverse

- Reverses the waveform. Creates unique sounds which may not be naturally made by humans.

Pitch-shifting

- Lower pitch creates a deep voice, and higher pitch can cause the chipmunk voice effect

Compression

- It lowers the volume of the loudest parts of the signal in order to help prevent clipping and distortion that can occur when multiple sounds are played and multiplexed together at once.

Autotune

- Automatically adjusts the pitch to stay within a set key. Faster adjustment can sound like a robotic voice, while slower tuning can be nearly unnoticeable as it keeps longer notes in the right key.

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Guess the Filter Effects

- 1) Here is the chosen audio clip:
<https://www.101soundboards.com/sounds/311166-to-infinity-and-beyond>
- 2) Play each of the different tracks and guess what filter was used:

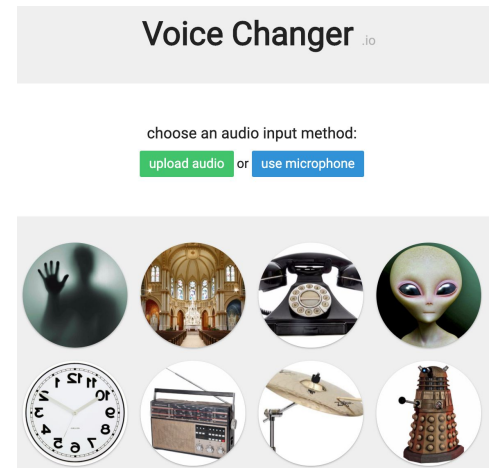
Tracks here:

<https://www.101soundboards.com/boards/32795-mixing-effects-music-makers-camp>

1 =	5 =	9 =
2 =	6 =	10 =
3 =	7 =	11 =
4 =	8 =	12 =

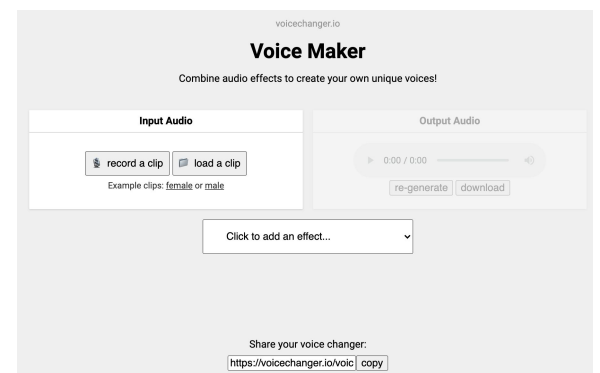
Voicechange.io Filter Effects

- 1) <https://voicechanger.io/> - has premade filters to use with your mic or import clips
- 2) Try recording a clip using the microphone, or import audio to try some of the premade filters.



Build Your Own Filter

- 1) <https://voicechanger.io/voicemaker/#>
- 2) Add multiple effects and save



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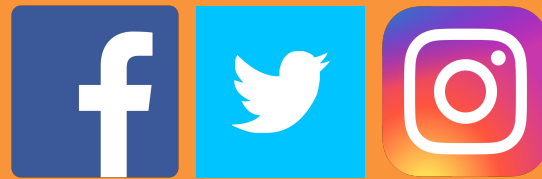
Guess the Filter Answers:

1 = vibrato	5 = cave reverb	9 = chorus
2 = low pass	6 = tremolo	10 = delay
3 = pitch up	7 = reverse	11 = phaser
4 = distorted	8 = high pass	12 = pitch down

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Want to share your
project or results with us?

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Have a question?

Reach us at
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