

Introduction to Web Design

Web Audio and Video



Introduction to Web Design

Sound

Web Audio and Video

Sound consists of pressure waves moving through air.

Without air, there is no sound.

Our ears are sensitive to pressure waves and transmit these signals to the brain.

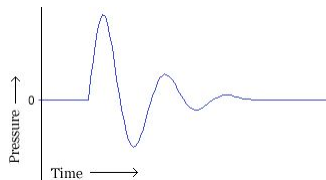


https://www.youtube.com/watch?v=6FI5Z_aw3Fc

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Hand Clap

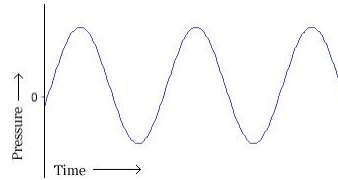


<https://freesound.org/people/mikaelfernstrom/sounds/68698/>

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Periodic Wave



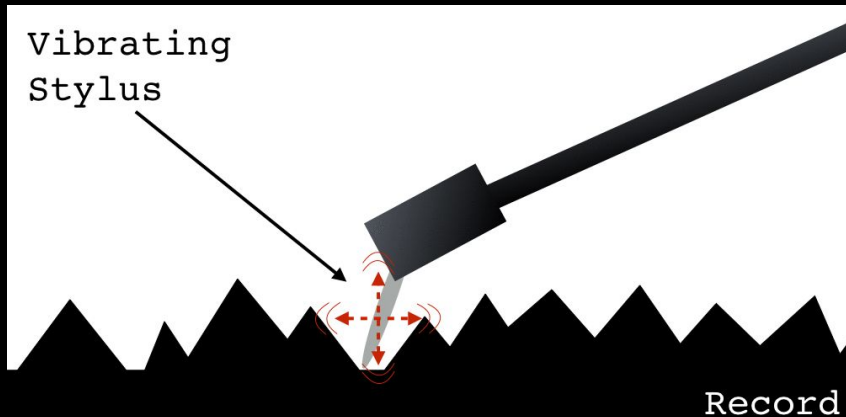
<https://freesound.org/people/Jovica/packs/489/>

The Sound of the Internet

<https://freesound.org/people/lintphishx/sounds/65786/>

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Sound Recording



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When sound is recorded, acoustic waves are converted to electrical waves.

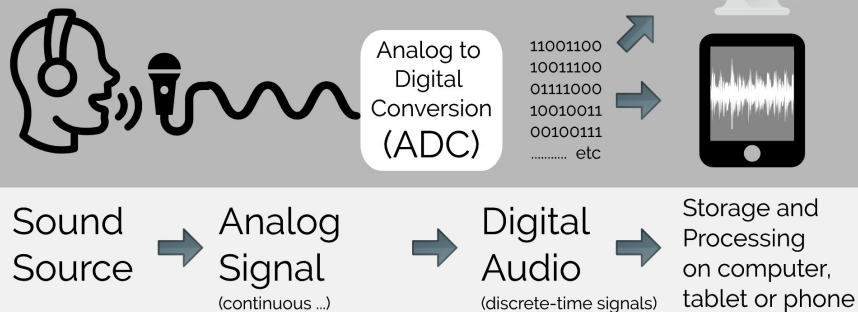
A microphone consists of a small membrane that vibrates. Movements of the membrane are translated into electrical signals.

Higher pressure typically corresponds to higher voltage.

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Digital Audio

Sampling: The Core Concept of Digital Audio Recording



Web Audio and Video

An audio signal is an analog (continuous) format.

The electrical waves must be converted to digital information for computational processing.

Digital recording is accomplished with an analog-to-digital converter (ADC).

The ADC captures a snapshot of the electric voltage on an audio line and represents it as a digital number.

Capturing the voltage thousands of times per second creates a good approximation of the original audio.

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Digital Audio Playback

Web Audio and Video

All computers must give us analog signals to be useful.

The screen converts digital information to light.

The digital-to-analog converter (DAC) takes the sample and sets a certain voltage on the analog outputs to recreate the signal.

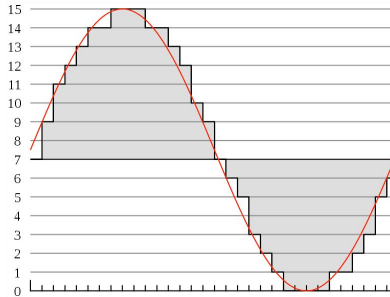
This voltage is conveyed to the speakers which create pressure waves in the air.

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Digital/Analog Sound

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<https://www.bhphotovideo.com/c/buy/AD-DA-Converters/ci/14831>



<https://www.avid.com/pro-tools>

<https://www.apple.com/mac/garageband/>

<https://www.audioadvice.com/videos-reviews/what-is-a-dac/>

<https://www.audacityteam.org/>

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Digital Video

Web Audio and Video

Analog video uses a continuous electrical signal to capture footage on magnetic tape. Examples: VHS or Hi-8.

In theory, analogue video can capture more information leading than digital video but dv is now so widely implemented it would be rare to find analogue video still being used.

Digital Video is encoded in binary information and can be reproduced infinitely with no quality loss.

mp4 , mov , avi , mov , .wmv are some formats found on the web

VIDEO CODECS + FORMATS FOR THE WEB

MP4 MOV WMV H264

RECOMMENDED: MP4 using H264 Codec

Can also use quicktime for .mov if an alpha channel is needed

<https://www.freecodecamp.org/news/video-formats-for-the-web/>

Free video compression and conversion

<https://handbrake.fr/>

Rendering: <https://www.adobe.com/products/media-encoder.html>

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HTML Audio and Video

Web Audio and Video

HTML5 supports audio and video natively in the web browser.

For years, it was necessary to rely on a third party to deliver this kind of content.

Now we can use the `<audio>` and `<video>` tags.

The `<audio>` and `<video>` tags use `src` attribute or the `<source>` tag to specify one or more media resources.

https://i6.cims.nyu.edu/~mr6465/web_design/media/

https://i6.cims.nyu.edu/~mr6465/web_design/media/video-player.html

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HTML Inline Frames

Web Audio and Video

Another way to embed media on a web page is with the HTML inline frame element: `<iframe>`

An inline frame represents a nested browsing context, embedding another HTML page into the current one.

Embedding all or part of one web page into another is way to present content on a website.

<https://syncfiddle.net/fiddle/-MpYt1hUaWa1XL-mUp6X>