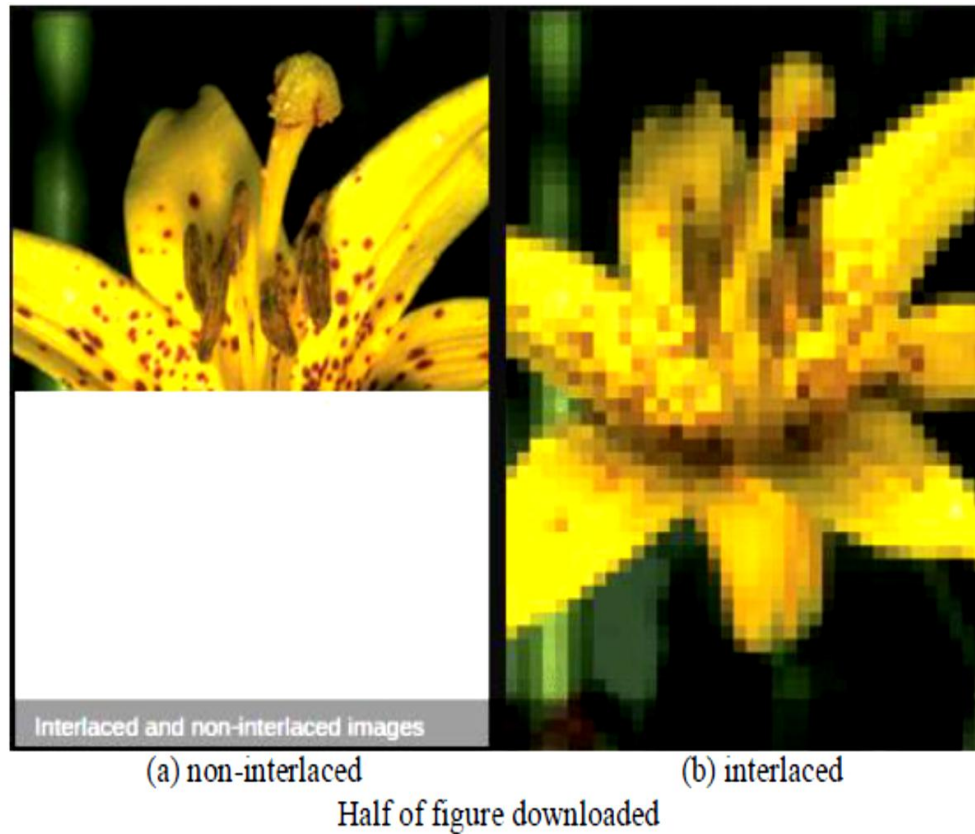


VIDEO

The Difference Between Interlaced And Non-Interlaced Images

These images look and function almost the same way as a non-interlaced image with one exception—how it appears to load to your visitor. If you have a large image on your site and someone with a slower Internet connection comes to view that image, a non-interlaced image will simply be blank until the data transfers and then slowly it will appear from top to bottom.

An interlaced image will appear completely, but it will be highly pixelated. As the data transfers, the picture will begin to get clearer and clearer until the full resolution becomes apparent. A perfect example of the difference between the two can be seen below:



Deinterlacing is the process of converting interlaced video, such as common analog television signals into a non-interlaced form.

To display interlaced video on a progressive scan display requires a process called deinterlacing. This is an imperfect technique, and causes various artifacts—particularly in areas with objects in motion. Providing the best picture quality for interlaced video signals requires expensive and complex devices and algorithms.

Method 1: Capturing one field and combining it with the next field, Problem: "combing" effect.

Method 2: Line doubler The most basic and literal way to double lines is to repeat each scanline. Most line doublers use digital interpolation to recreate the missing lines in an interlaced signal, and the resulting quality depends on the technique used. Generally a line doubler will only interpolate within a single field, rather than merging information from adjacent fields, to preserve the smoothness of motion.

When interlaced video is watched on a progressive monitor with very poor deinterlacing, it exhibits combing when there is movement between two fields of one frame.



4- Video formats:

a- Analog Video: Analog video is represented as a continuous (time varying) signal.

i- NTSC Video

- NTSC (National Television System Committee) TV standard is mostly used in North America and Japan. It uses the familiar 4:3 aspect ratio (i.e., the ratio of picture width to its height) and uses 525 scan lines per frame at 30 frames per second (fps). NTSC follows the interlaced scanning system, and each frame is divided into two fields, with 262.5 lines/field.

ii- PAL Video

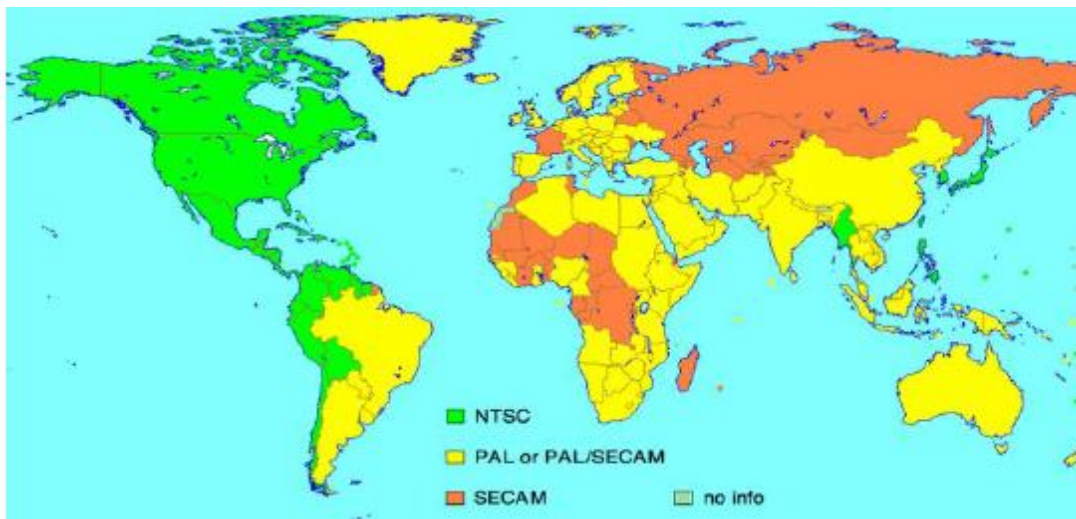
- PAL (Phase Alternating Line) is a TV standard widely used in Western Europe, China, India, and many other parts of the world.

- PAL uses 625 scan lines per frame, at 25 frames/second, with a 4:3 aspect ratio and interlaced fields.

iii- SECAM Video

SECAM stands for Systeme Electronique Couleur Avec Memoire, the third major broadcast TV standard.

- SECAM also uses 625 scan lines per frame, at 25 frames per second, with a 4:3 aspect ratio and interlaced fields.
- SECAM and PAL are very similar. They differ slightly in their color coding scheme.



b- Digital Video

Digital video is represented as a sequence of digital images.

The advantages of digital representation for video are many. For

example:

(a) Video can be stored on digital devices or in memory, ready to be processed (noise removal, cut and paste, etc.), and integrated to various multimedia applications;

(b) Direct random access is possible, which makes nonlinear video editing achievable as a simple, rather than a complex, task;

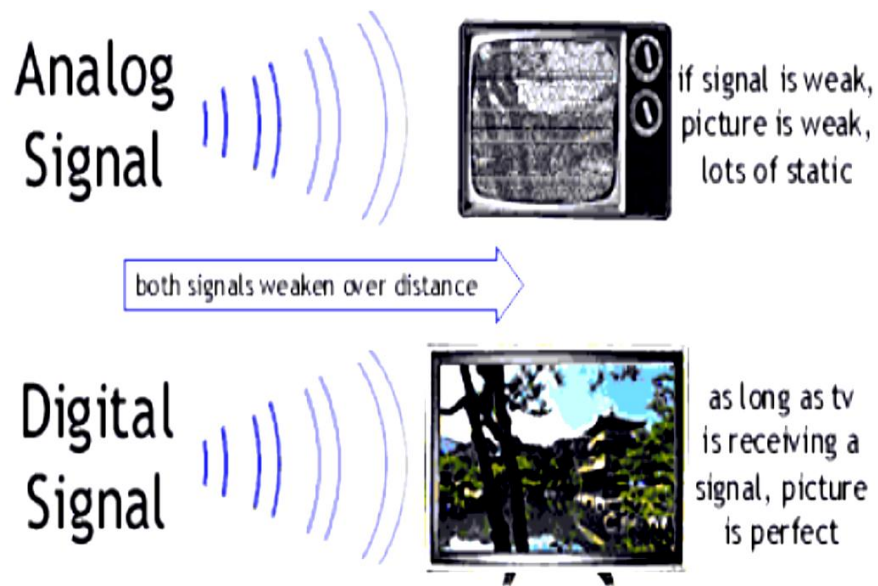
(c) Repeated recording does not degrade image quality;

(d) Ease of encryption and better tolerance to channel noise.

(e) An advantage digital has over analog is that analog signals can't be compressed as well as a digital signal can.



Almost all digital video uses component video.



High Definition TV (HDTV)

The introduction of wide-screen movies brought the discovery that viewers seated near the screen enjoyed a level of participation not experienced with conventional movies. Apparently the exposure to a greater field of view, especially the involvement of peripheral vision, contributes to the sense of "being there". The main thrust of High Definition TV (HDTV) is not to increase the "definition" in each unit area, but rather to increase the visual field, especially its width



The salient difference between conventional TV and HDTV:

(a) HDTV has a much wider aspect ratio of 16:9 instead of 4:3 where 16:9 is closer to aspect ratio of the human eye sight.

(b) HDTV moves toward progressive (non-interlaced) scan. The rationale is that interlacing introduces serrated edges to moving objects and flickers along horizontal edges.

(c) HDTV has higher resolution 1280 ×720 or 1920 ×1080.

Video quality

Video quality is a characteristic of a video passed through a video transmission or processing system, representing a measure of perceived degradation with respect to the original source video. Video processing systems may introduce some amount of distortion or artifacts in the video signal, which negatively impacts the user's perception of a system. For many stakeholders such as content providers, service providers and network operators, the assurance of video quality is an important task.