

1 Introduction

When is a video considered viral?

Name three examples of formats for digital media.

Name three of the traditional senses in human perception.

What are the primary colors the human eye can recognize?

Name and describe a monocular cue (one that only needs one eye) for 3D vision.

How many frames per second imply smooth movement?

How does a sound with 50 Hz sound. Is it a high or a low tone?

How does a sound with 16.000 Hz sound. Is it a high or a low tone?

What are the two main steps in digitization of an analogue signal?

What does the term “entropy” mean in the context of information theory and what is the difference between a text (or signal) with high and low entropy? Give an example.

Give three example use cases for cryptography.

If we apply a trapdoor, one-way function to a password to obtain a password hash, is it easy to infer / recover the password from the hash? Please argue your answer.

What is the difference between symmetric key and public key cryptography?

What are the Creative Commons licenses and why have they been introduced?

In the 1940s The ASCAP had an exclusive license on the most popular music, however, in 1939 BMI (Broadcast Music Inc.) was founded. Why has it been founded, and why was it successful?

Consider someone in the USA creates a remix of a popular song which s/he has bought on a CD. Is it legal to (i) create the remix and to (ii) publish it online?

State and argue a reason why DRM, for example for digitally protected music files, does not make life easier for customers.

2 Hypertext

What does the American Standard Code for Information Interchange (ASCII) define?

Give five examples of letters, which are not in the ASCII standard.

What is the difference between Unicode and ISO/IEC 8859-1 “Latin-1”?

What is WYSIWYG editing?

Why did Apple and Microsoft introduce True Type Fonts?

What are *Bitmap Fonts*?

What does *movable type* mean in the context of the printing press systems? How were the types made for Gutenberg's press?

What is the most prominent book that came out of the Gutenberg printing press?

What is the difference in fonts between printed text from a printing press with movable types and a text written with a type writer?

What are *Egyptian* typefaces?

What are *Markup Languages*? Name at least one and describe what it is/was being used for.

What is *Markdown*?

What is *Hypertext*?

Can wiki languages (wikitext, creole) be used in a hypertext system, or in other words: Are wikis hypertext systems? Please argue your answer.

What is Memex?

3 Information Retrieval

What is *information retrieval*?

What is the difference between *information retrieval* and *data retrieval*?

What is the difference between *browsing* and *searching*?

Name two different retrieval models and outline a significant difference between them.

What is the term frequency? Explain in your own words, no formulas needed.

What is the inverse document frequency? Explain in your own words, no formulas needed.

Explain what "bow tie structure" in the context of the world wide web (WWW) means.

Besides text, Google uses structural information to rank web search results. Where does this "structural information" come from?

Describe in your own words the idea of the *random surfer*, which builds the base for the PageRank algorithm.

Does search engine optimization optimize search engines? Argue for your answer.

4 Images

How is color defined in digital images?

What is the difference between a color palette and a color space?

Argue for or against this statement: color on a computer screen follow an additive color scheme.

What is the *alpha channel*?

For the HSV color space, what do the components define, ie. what changes if I change either of the three values?

What is the difference between lossy and lossless compression?

Is DCT a lossy or a lossless compression technique?

Name two video or image compression format that use DCT compression.

Does BMP (PNG, GIF, JPG) apply lossy or lossless compression?

What is the benefit of an image stored and transmitted in interlaced mode?

What is dithering? Give at least one example where is / has been used.

5 Videos

Typically a video is a combination of streams. Give one example for a common combination (eg. for a DVD, Blu-Ray, etc).

What is the difference between inter and intra frame compression?

What is a GOP (group of pictures) and what is it used for?

Outline the basic idea of motion compensation. Does it allow for better compression of videos?

Name two common video container formats.

What is the difference between downloading a video file and streaming it?

6 Audio

For digital sound, what is the difference between storing a mono sound and a stereo sound?

Outline at least one benefit of the spectral audio visualization over the waveform visualization.

What does a high pass / low pass filter remove from an audio signal. Describe how one would hear the effect.

What is clipping? Give an example when clipping can happen.

What is *psychoacoustic modeling*? Explain in your own words.

7 Metadata

What is metadata and why do we need it?

What is the problem or *preservation* in metadata?

Name and shortly describe two metadata standards.

What kind of does the EXIF standard allow for, where is it typically used?

What is MPEG-7?

What is MPEG-21?