

GCSE Bitesize Computer Science

Google's Diana Gorea on video compression

My name is Diana Gorea, I'm a software engineer at Google. Most videos that are out there online, on YouTube for instance, are there in an encoded format.

An encoded format is opposed to the raw format of a video, which is essentially a sequence of frames or images. If we were to store that sequence of frames on a hard disc or stream it over a network, this will occupy an immense amount of storage or an immense amount of bandwidth. Therefore, an encoding process is needed. Most encoding algorithms will attempt to identify redundant frames, which means frames that can be dropped without affecting the quality too much, or, they can identify the differences between two subsequent frames, and then they will try to store only the differences. This will reduce the file size and this will also reduce the amount of bandwidth that's necessary to stream the video.

Unavoidably, there is a compromise in quality and video size. The video quality is proportional to the file size, and so is the screen dimension. When a user uploads a file on YouTube, this file will typically already be encoded because most modern cameras record videos already in an encoded format. You can recognise this format by the extension of the file, for instance mp4, avi, ogg or swf.