Note 0.3

Use computer to solve problems

### Creative work

# Photo/Video

# Digital imaging or digital image acquisition is the creation of a digitally encoded representation of the visual characteristics of an object, such as a physical scene or the interior structure of an object. The term is often assumed to imply or include the processing, compression, storage, printing, and display of such images. A key advantage of a digital image, versus an analog image such as a film photograph, is the ability make copies and copies of copies digitally indefinitely without any loss of image quality

# In [digital imaging](https://en.wikipedia.org/wiki/Digital_imaging), a pixel, pel, or picture element is a physical point in a [raster image](https://en.wikipedia.org/wiki/Raster_graphics), or the smallest addressable element in an [all points addressable](https://en.wikipedia.org/wiki/All_points_addressable) [display device](https://en.wikipedia.org/wiki/Display_device); so it is the smallest controllable element of a picture represented on the screen.

# Each pixel is a [sample](https://en.wikipedia.org/wiki/Sampling_(signal_processing)) of an original image; more samples typically provide more accurate representations of the original. The [intensity](https://en.wikipedia.org/wiki/Intensity_(physics)) of each pixel is variable. In color imaging systems, a color is typically represented by three or four component intensities such as [red, green, and blue](https://en.wikipedia.org/wiki/RGB_color_model), or [cyan, magenta, yellow, and black](https://en.wikipedia.org/wiki/CMYK_color_model). Mostly common use color representation is RGB.

# 图片包含 电子产品, 计算机 描述已自动生成

# The term resolution is often considered equivalent to pixel count in digital imaging, though international standards in the digital camera field specify it should instead be called "Number of Total Pixels" in relation to image sensors, and as "Number of Recorded Pixels" for what is fully captured.

# 

# Analog and early digital

# 352×240 : Video CD

# 333×480 : VHS, Video8, Umatic

# 350×480 : Betamax

# 420×480 : Super Betamax, Betacam

# 460×480 : Betacam SP, Umatic SP, NTSC (Over-The-Air TV)

# 580×480 : Super VHS, Hi8, LaserDisc

# 700×480 : Enhanced Definition Betamax, Analog broadcast limit (NTSC)

# 768×576 : Analog broadcast limit (PAL, SECAM)

# Digital

# 500×480 : Digital8

# 720×480 : D-VHS, DVD, miniDV, Digital Betacam (NTSC)

# 720×480 : Widescreen DVD (anamorphic) (NTSC) SD

# 854×480 : EDTV (Enhanced Definition Television)

# 720×576 : D-VHS, DVD, miniDV, Digital8, Digital Betacam (PAL/SECAM)

# 720×576 : Widescreen DVD (anamorphic) (PAL/SECAM)

# 1280×720 : D-VHS, HD DVD, Blu-ray, HDV (miniDV)

# 1440×1080 : HDV (miniDV)

# 1920×1080 : HDV (miniDV), AVCHD, HD DVD, Blu-ray, HDCAM SR FHD

# 1998×1080 : 2K Flat (1.85:1)

# 2048×1080 : 2K Digital Cinema

# 3840×2160 : 4K UHDTV, Ultra HD Blu-ray UHD

# 4096×2160 : 4K Digital Cinema

# 7680×4320 : 8K UHDTV

# 15360×8640 : 16K Digital Cinema

# 61440×34560 : 64K Digital Cinema

# The RGB color model is an additive color model in which red, green, and blue light are added together in various ways to reproduce a broad array of colors. The name of the model comes from the initials of the three additive primary colors, red, green, and blue.

# A pixel in RGB can be present by 3bytes. Ex: [0..255][ 0..255][ 0..255]

# 图片包含 砖形, 浅色, 墙壁, 物体 描述已自动生成 图片包含 屏幕截图 描述已自动生成

# A raster graphics editor is a computer program that allows users to create and edit images interactively on the computer screen and save them in one of many "bitmap" or "raster" formats such as JPEG, PNG, GIF. Most noticeably raster graphics editor is Adobe Photoshop.

# Common features

# Select a region for editing

# Draw lines with simulated brushes of different color, size, shape and pressure

# Fill a region with a single color, gradient of colors, or a texture

# Select a color using different color models, e.g., RGB, HSV, or by using a color dropper

# Edit and convert between various color models.

# Add typed letters in various font styles

# Remove imperfections from photo images

# Composite editing using layers

# Apply filters for effects including sharpening and blurring

# Convert between various image file formats

# Digital video is an electronic representation of moving visual images ([video](https://en.wikipedia.org/wiki/Video)) in the form of encoded [digital data](https://en.wikipedia.org/wiki/Digital_data). This is in contrast to [analog video](https://en.wikipedia.org/wiki/Analog_video), which represents moving visual images with [analog signals](https://en.wikipedia.org/wiki/Analog_signal). Digital video comprises a series of [digital images](https://en.wikipedia.org/wiki/Digital_image) displayed in rapid succession. Popular [compressed](https://en.wikipedia.org/wiki/Data_compression) digital video formats today include [H.264](https://en.wikipedia.org/wiki/H.264) and [MPEG-4](https://en.wikipedia.org/wiki/MPEG-4).

# A frame is one of the many still images which compose the complete moving picture (digital video). When the moving picture is displayed, each frame is flashed on a screen for a short time (nowadays, usually 1/24, 1/25 or 1/30 for movie, 1/60, 1/120 1/144 for computer/phone/tablet) and then immediately replaced by the next one.

# Frame rate (expressed in frames per second or FPS) is the frequency (rate) at which consecutive images called frames appear on a display. Ex 60fps,144fps

# Video editing is the manipulation and arrangement of video shots. Video editing is used to structure and present all video information, including films and television shows, video advertisements and video essays.

# Linear video editing uses video tape and is edited in a very linear way. Several video clips from different tapes are recorded to one single tape in the order that they will appear.

# Non-linear editing systems (NLE) allow video to be edited on computers with specialized software. This process is not destructive to the raw video footage and is done by using programs such as DaVinci Resolve, Avid Media Composer, Adobe Premiere Pro and Final Cut Pro.

# Make Game/VR

# A game engine is a software-development environment designed for people to build video games. Developers use game engines to construct games for consoles, mobile devices, and personal computers.

# Unreal Engine 4, one of the major game engines and used to create several notable games such as Fortnite, PlayerUnknown's Battlegrounds, and Life Is Strange 2, adopted a free-to-use structure with a royalty on all game sales using this engine.

# Unity engine, utilizing a similar pay module to the Unreal Engine. This engine is behind games such as Rust, Subnautica, and Life Is Strange: Before the Storm. This engine is mostly use for mobile platform.

# IDE

# An integrated development environment (IDE) is a software application that provides comprehensive facilities to computer programmers for software development. An IDE normally consists of at least a source code editor, build automation tools and a debugger. Some IDEs, such as NetBeans and Eclipse, contain the necessary compiler, interpreter, or both.

# Well know IDEs: Visual Studio, Xcode, IntelliJ IDEA(java), PyCharm(python),.

# Jupyter Notebook (formerly IPython Notebooks) is a web-based interactive computational environment for creating Jupyter notebook documents. Jupyter Notebook is commonly used mechanical learning.

### Office work

# Word processor

# A word processor (WP) is a device or computer program that provides for input, editing, formatting and output of text, often with some additional features.

# Word processing software: Microsoft Word, Apple Page, WPS

# Presentation

# A presentation program is a software package used to display information in the form of a slide show. It has three major functions: an editor that allows text to be inserted and formatted, a method for inserting and manipulating graphic images, and a slide-show system to display the content.

# Presentation software: Microsoft Powerpoint, Apple Keynote, WPS

# Spreadsheet

# A spreadsheet is an interactive computer application for organization, analysis and storage of [data](https://en.wikipedia.org/wiki/Data) in [tabular](https://en.wikipedia.org/wiki/Table_(information)) form. Spreadsheets were developed as computerized analogs of paper accounting [worksheets](https://en.wikipedia.org/wiki/Worksheet#Accounting). The program operates on data entered in cells of a table. Each cell may contain either numeric or text data, or the results of [formulas](https://en.wikipedia.org/wiki/Formula) that automatically calculate and display a value based on the contents of other cells.

# Spreadsheet software: Microsoft Excel, Apple Numbers, WPS

# Database

# A database is an organized collection of data, generally stored and accessed electronically from a computer system. Where databases are more complex, they are often developed using formal design and modeling techniques.

# The database management system (DBMS) is the software that interacts with end users, applications, and the database itself to capture and analyze the data. The DBMS software additionally encompasses the core facilities provided to administer the database.

# Relational databases became dominant in the 1980s. These model data as rows and columns in a series of tables, and the vast majority use SQL for writing and querying data. In the 2000s, non-relational databases became popular, referred to as NoSQL because they use different query languages.

# Entertainment

# Web

# A web page (also written as webpage) is a document that is suitable to act as a web resource on the World Wide Web. In order to graphically display a web page, a web browser is needed. This is a type of software that can retrieve web pages from the Internet. When accessed by a web browser it may be displayed as a web page on a monitor or mobile device. Typical web pages are hypertext documents which contain hyperlinks, often referred to as links, for browsing to other web pages.

# A web browser (commonly referred to as a browser) is a software application for accessing information on the World Wide Web. When a user requests a particular website, the web browser retrieves the necessary content from a web server and then displays the resulting web page on the user's device. As of March 2019, more than 4.3 billion people use a browser, which is about 55% of the world's population. The three most popular browsers are Chrome, Firefox, and Safari.

# 图片包含 文字, 地图 描述已自动生成

# Game

# A video game is an electronic game that involves interaction with a user interface to generate visual feedback on a two- or three-dimensional video display device such as a touchscreen, virtual reality headset or monitor/TV set. Since the 1980s, video games have become an increasingly important part of the entertainment industry, and whether they are also a form of art is a matter of dispute.

Streaming Media

**Streaming media** is multimedia that is constantly received by and presented to an end-user while being delivered by a provider. A client end-user can use their media player to start playing **digital video** or **digital audio** content before the entire file has been transmitted.

Some popular streaming services include Hulu, Netflix, Prime Video, the video sharing website YouTube, and other sites which stream films and television shows; Apple Music and Spotify, which stream music; Stadia for stream game.