

# Photos

By Giles Godart-Brown

# What is a photo?

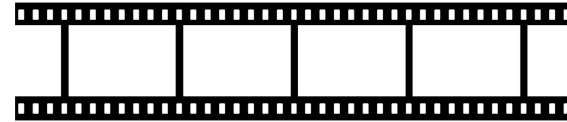
- All images on computers consist of rows and columns of tiny coloured dots which you can see if you zoom in enough, these are called pixels



## Image storage

- Typically images are captured at 300 dots per inch, i.e. a postcard sized image would need 1,350,000 dots!
- Consequently all images are stored using lossless compression to make them smaller these are usually named after the group that created them. Common formats are;
  - JPG, PEG - Joint Picture Experts Group, general purpose, most used on cameras
  - GIF - Graphics Interchange Format, best for small icons and animations.
  - PNG - Portable Network Graphic, supports transparent background so used for odd-shaped images
  - BMP - Microsoft Bitmap, rarely used today
  - HEIF - High Efficiency Image File Format, used on iPhones to support their advanced image features but not supported very well on PC – do not email these to anyone who may not have a Mac or iPhone

# Video



- A video is simply a sequence of still images, just like on a cine film
- Each frame is compressed by similar techniques as those for still images
- They are also compressed inter-frame – only the pixels that are different from the previous frame are stored
  - Compression is VERY efficient, only about 2% of the data captured in a TV camera ends up going to the satellite!
  - Compression is very compute intensive, even today it causes about a 2 second delay on TV signals
- Video is un-compressed when played.
- There are lots of formats, here are the most common
  - MPEG, MP4 Motion Picture Experts group – most often used
  - MOV – Apple Movie format
  - AVI – Advanced Video Interleaved – Microsoft
  - WMV – Windows Media Video – Microsoft low quality

# Importing Photos

# Importing photos to your disk drive from a USB stick or SD card adaptor

Drag and drop in Explorer



## Importing photos to your disk drive from an iPhone

- From an iPhone with a cable
  1. Connect PC to Phone by a USB cable, unlock the phone and select 'Trust the computer' if it asks then either
    - The Phone will appear as a disk drive in Windows explorer and you can copy and paste in the normal way or
    - Use the Windows Photos Application
- From an iPhone wirelessly
  - To copy to a Mac or iPhone use Airdrop if the devices are near each other
  - Use iCloud
  - Email the photo as an attachment to yourself

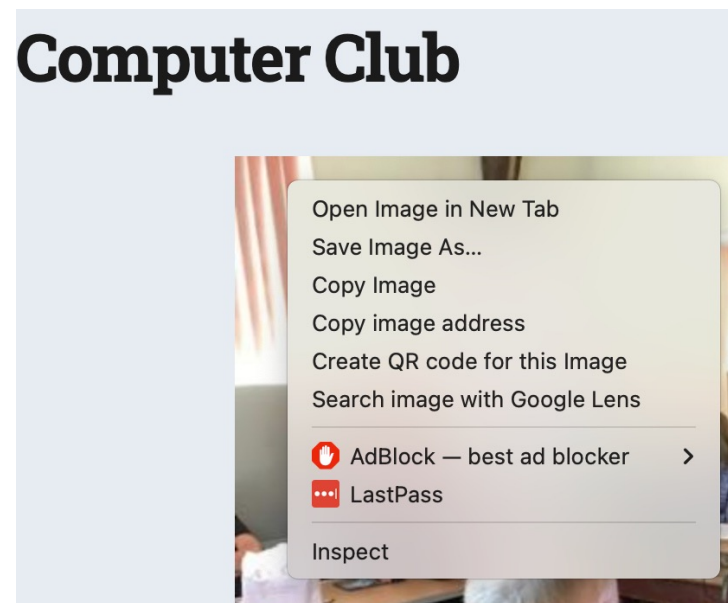
## Importing photos to your disk drive from an Android Phone

- From an Android Phone with a cable
  - Connect PC to Phone by a USB cable, and under ‘Use USB connection for’, select the option called File Transfer or MTP (Media Transfer Protocol), not just charging.
  - The Phone will appear as a disk drive in Windows explorer and you can copy and paste in the normal way or
  - Use the Windows Photos Application
- From an Android phone wirelessly
  - Android Nearby Share will copy to another Android phone
  - Use a cloud storage app like Google Drive
  - Email the photo as an attachment to yourself



# Importing photos to your disk drive from a web page

Right click on it and select 'Save Image As ..'



# Scanners and scanning

## Step 1 – Is your scanner connected to your computer?

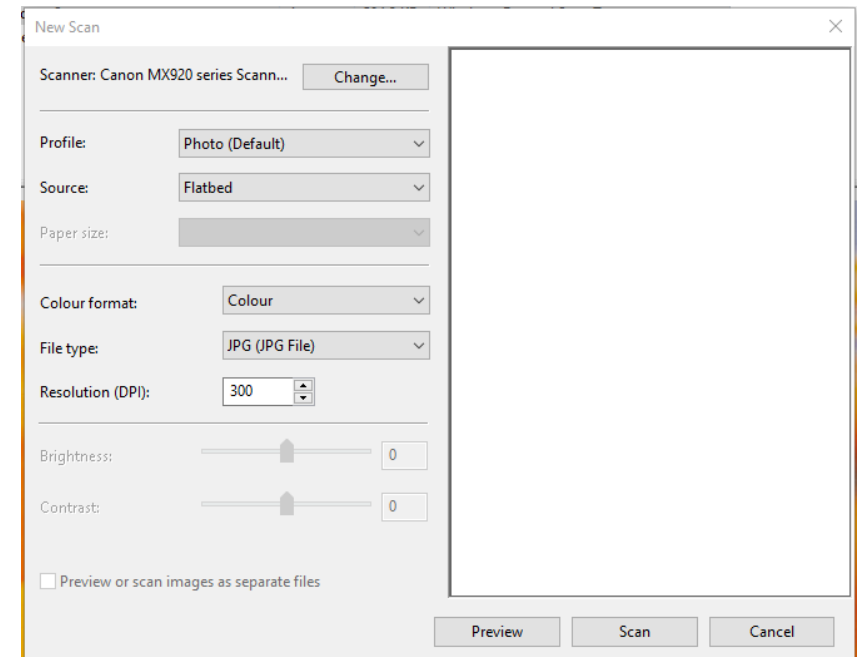
- Scanners can be directly connected to your computer via USB, or more often now they are connected by WiFi.
- When you installed your printer it will give you instructions for how to set the WiFi Network name (SSID) and password. Some Printers support Wi-Fi Protected Setup (WPS) where you press a button on your router, followed by a setting on your printer and they pair up automatically.
- If your PC still cannot see your scanner, try a test by connecting it with a USB cable

## Step 2 – Does your PC recognise your Scanner?

- Go to Settings>Devices>Printers and Scanners (Apple>System preferences>Printers & scanners on Mac) and check that your scanner is on the list, if not, then add it (+ on mac).
- If it's a combined printer/scanner check that you can do a test print

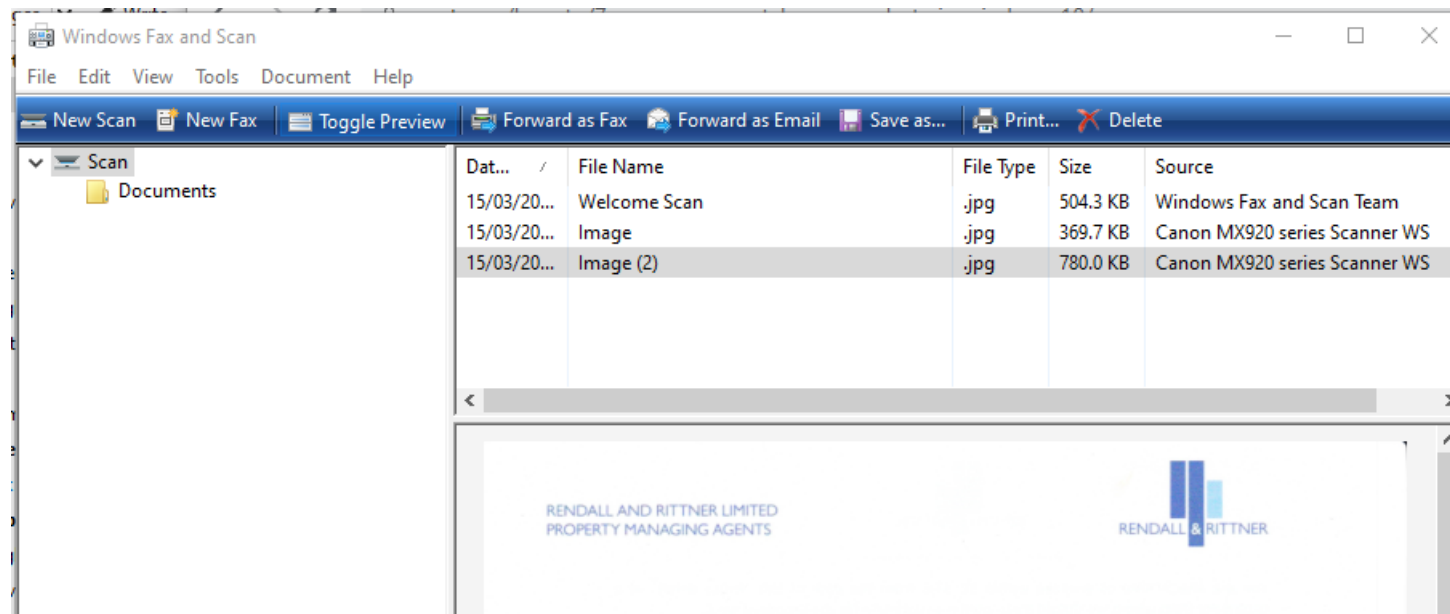
## How to scan – method 1 via the Microsoft Fax and Scan app

- Type scan in the search box at the bottom left of the screen and select the Windows Fax and Scan application
- Click scan on the bottom left followed by new scan at the top left
- A pop-up like this will appear, select options, then Preview. Select the area you want to scan and then press Scan



## Microsoft Fax and scan app

- Once the image has been scanned it is put into Documents\Scanned Documents



## Limitations of Microsoft Fax and Scan

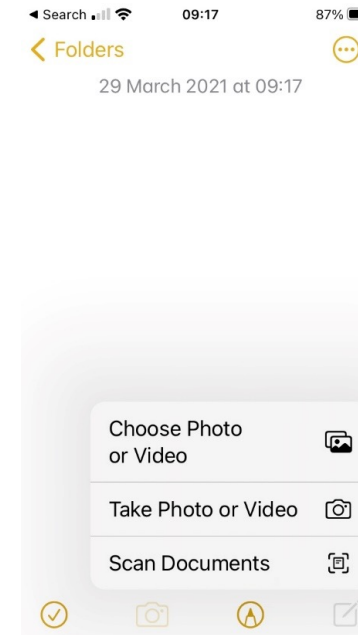
- Microsoft Scan and Fax is fine for simple scans but has several limitations;
  - Only really good for single page scans
  - No Optical Character Recognition (OCR)
  - No direct PDF support
  - Older scanners are not supported

# Alternatives for Scanning



## Use your Smart Phone

- Smartphones have excellent cameras.
  - The Notes App on the iPhone has a ‘Scan Documents’ option when you click on the camera.



## Sneaker-net

- Many modern scanners have a USB socket, if so, then you can:
  - Put a USB memory stick in the socket.
  - Scan using the control panel on the scanner.
  - Remove the stick from the scanner and mount it on your PC.



## Scanning Software

- Not Another PDF Scanner 2 - NAPS2 <https://www.naps2.com/> (Windows only)
  - Free
  - Supports many of the older scanners.
  - Multipage scans
  - Output directly to PDF with rudimentary OCR (select all, copy and paste the PDF)
- VueScan - <https://www.hamrick.com/> (Mac and PC)
  - Costs £ 30, but has a free trial version with limitations
  - Supports pretty much all scanners
  - Multipage scans
  - Highly configurable

# The Windows Photos App

# Metadata

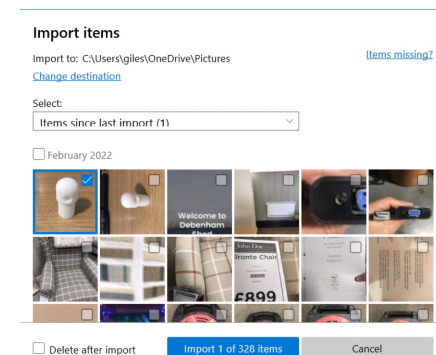
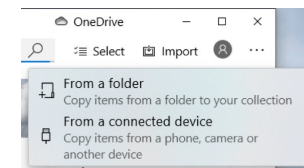
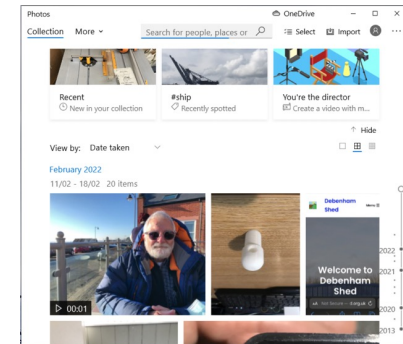
- Photo files not only contain the actual image but they also contain a lot of information about it;
  - Details of the camera and settings
  - Colours and brightness
  - GPS location data
  - Dates and times
  - Compression details (JPEG etc.)
- You can see the Metadata by finding the photo in Windows File Explorer, right clicking on it and selecting Properties>Details
- The Windows photos application uses Metadata to enable sophisticated searches

## What is the Windows Photos Application?

- The Photos app in Windows 10 gathers photos from your PC, phone, and other devices, and puts them in one place where you can more easily find what you're looking for.
- The app recognises faces and objects in images and adds tags to help you find what you need without endless scrolling. For example, try searching for "beach," "dog," or "smile," or select a face shown in the search pane to see all photos that person is in.
- Browse your collection by date, album, video projects, people, or folder. Or search to find a specific person, place, or thing.

# Importing photos into Windows Photo App

1. Connect the phone to the PC using a cable and select trust this computer if asked, then run the Windows Photos application.
2. Select Import>From a connected device  
NOTE: you can also import from a folder on your PC
3. Pick the photos you wish to import and click on Import nn items. By default they will be stored in your Photos folder.



# Editing Photos

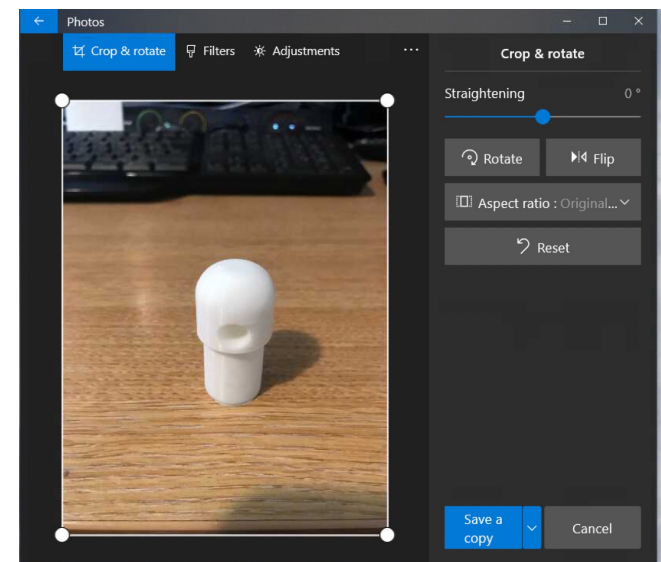
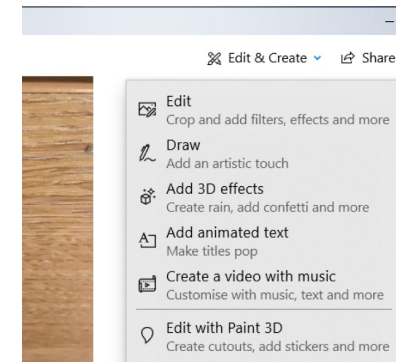


# Editing with the Windows Photos App

The Windows Photos application has rudimentary editing features e.g. Crop, Rotate, colour filters, sufficient for most tasks.

NOTE: It also has Red eye reduction and Spot fix but these have been removed from Windows 11. For anything more complex than this, use Gimp.

1. Click on an image in the Photos application, then select Edit and Create>edit
2. Select the effects you want and then click on Save a copy



## Photo edit exercises

- Edit the upside down photo, turn it around and crop it to size  
<https://godartbrowncom.ipage.com/MCC/docs/examples/photos/stanchion.JPG>



- Edit the red-eye photo  
<https://godartbrowncom.ipage.com/MCC/docs/examples/photos/RedEye.jpeg>



# The GNU Graphics Manipulation Program GIMP

## What is GIMP?

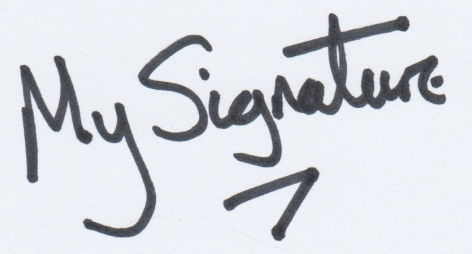
- GIMP is the GNU Image Manipulation Program, it is used for drawing and for editing photographs.
- You can download GIMP for free from <https://www.gimp.org/downloads/>
- It is a huge application, however there are many excellent tutorials on the subject on the internet, for example;
  - [https://www.youtube.com/watch?v=Q8C0LJPpr64&ab\\_channel=TechGumbo](https://www.youtube.com/watch?v=Q8C0LJPpr64&ab_channel=TechGumbo) (15 minutes)
  - <https://www.youtube.com/watch?v=x6pXJ7ljir0> (50 minutes)
- GIMP is open source, so there are huge numbers of plugins that enhance its capabilities, for example the G'MIC filter library from <https://gmic.eu/download.html>

# Creating signature files

## Transparent Background?

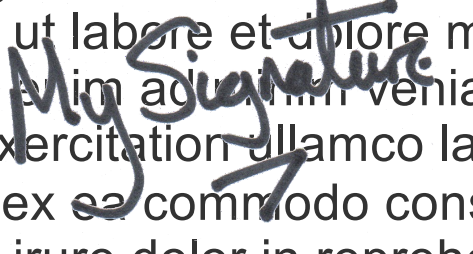
### Square Background (jpg)

Lorem ipsum dolor sit amet, consectetur adipiscing elit. sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.



### Transparent Background (png)

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.



## Using the mouse to draw your signature with a transparent background

- Create a new image in GIMP, make sure you have Advanced option > Background colour set to Transparent in the New image dialogue
- Make sure the background shows the checkerboard Transparent display
- Chose the pencil tool and a suitable colour and size and draw your signature with the mouse
- Export the resultant image as a .png file

## Using a scanned image to create a signature with a transparent background

- Scan your signature from a piece of paper
- Open the image in GIMP
- Right click on the Background Layer on the RHS of the screen and “Add Alpha Channel”
- Use the Fuzzy select tool to select the white space around your signature and hit the delete key to remove it, the checkerboard should show though.
- Carry on with fuzzy select and other paint tools to refine the image
- Export the resultant image as a .png file