
Images

학습목표

학습목표

1. 영상을 읽고 윈도우 창에 출력한다.
2. 영상의 기본 정보를 찾아본다.

Load and Display Images

Download Sample Images

https://github.com/opencv/opencv/blob/master/samples/data/messi5.jpg

Load and Display Images

```
import cv2

# Load an image
img = cv2.imread('messi5.jpg')

# Display the image in a window
cv2.imshow('image', img)

# Wait for a key to be pressed
cv2.waitKey(0)

# Destroy all windows
cv2.destroyAllWindows()
```

- 터미널에서 해당 경로로 이동한 뒤 코드 실행

```
$ cd [path/to/the/file]
$ python [filename]
```

https://docs.opencv.org/4.4.0/db/deb/tutorial_display_image.html

Load and Display Images

```python
import cv2
import os

# Get the path to the current file
cwd = os.path.dirname(os.path.abspath(__file__))

# Change the working directory
os.chdir(cwd)

# Load an image
img = cv2.imread('messi5.jpg')

# Display the image in a window
cv2.imshow('image', img)

# Wait for a key to be pressed
cv2.waitKey(0)

# Destroy all windows
cv2.destroyAllWindows()
```

- VSCODE에서 `Run Python File in Terminal` 클릭

https://docs.opencv.org/4.4.0/db/deb/tutorial_display_image.html

`cv.imread()`[1]

```
retval = cv.imread(filename[, flags])
```

- 파일로부터 이미지를 읽어들인다.
  - `filename`: 이미지 경로
  - `retval`: 읽은 이미지, NumPy 배열

`flag`[2]	**영상 읽기 모드**
`cv.IMREAD_UNCHANGED`	원본 그대로 사용
`cv.IMREAD_GRAYSCALE`	1채널 그레이스케일로 변환
`cv.IMREAD_COLOR`	3채널 BGR로 변환 (기본값)

1. https://docs.opencv.org/4.4.0/d4/da8/group__imgcodecs.html#ga288b8b3da0892bd651fce07b3bbd3a56
2. https://docs.opencv.org/4.4.0/d4/da8/group__imgcodecs.html#ga61d9b0126a3e57d9277ac48327799c80

`cv.imshow()`[1]

```
None = cv.imshow(winname, mat)
```

- 이미지를 고유한 윈도우 창에 출력한다.
  - `winname`: 윈도우 창 제목
  - `mat`: 출력할 이미지, NumPy 배열

1. https://docs.opencv.org/4.4.0/df/d24/group__highgui__opengl.html#gaae7e90aa3415c68dba22a5ff2cefc25d
2. https://076923.github.io/posts/Python-opencv-3/

`cv.waitkey()`[1]

```
retval = cv.waitKey([, delay])
```

- 키보드 입력을 기다린다.
  - `delay`: 대기 시간(ms), 0보다 작거나 같으면 무한히 대기
  - `retval`: 입력된 키 값, 대기 시간동안 입력이 없으면 -1

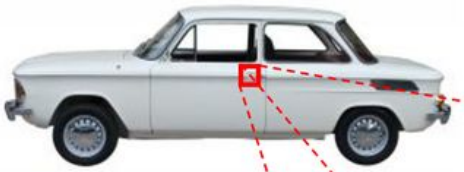
1. https://docs.opencv.org/4.4.0/d7/dfc/group__highgui.html#ga5628525ad33f52eab17feebcfba38bd7

Image Data Structure

Image Data

What is this?

You see this:



But the camera sees this:

194	210	201	212	199	213	215	195	178	158	182	209
180	189	190	221	209	205	191	167	147	115	129	163
114	126	140	188	176	165	152	140	170	106	78	88
87	103	115	154	143	142	149	153	173	101	57	57
102	112	106	131	122	138	152	147	128	84	58	66
94	95	79	104	105	124	129	113	107	87	69	67
68	71	69	98	89	92	98	95	89	88	76	67
41	56	68	99	63	45	60	82	58	76	75	65
20	43	69	75	56	41	51	73	55	70	63	44
50	50	57	69	75	75	73	74	53	68	59	37
72	59	53	66	84	92	84	74	57	72	63	42
67	61	58	65	75	78	76	73	59	75	69	50

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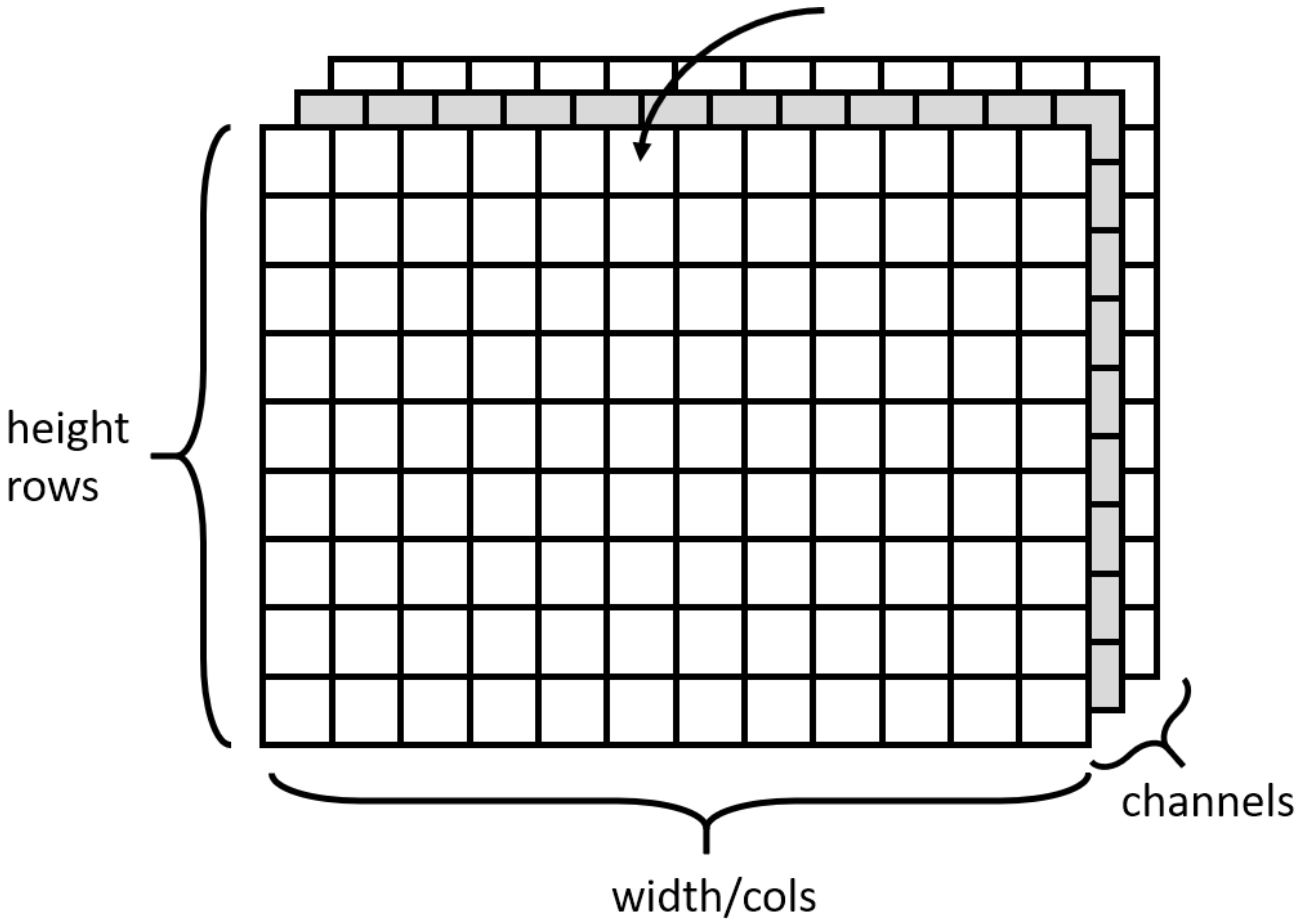
https://slideplayer.com/slide/14708730/

Image Properties

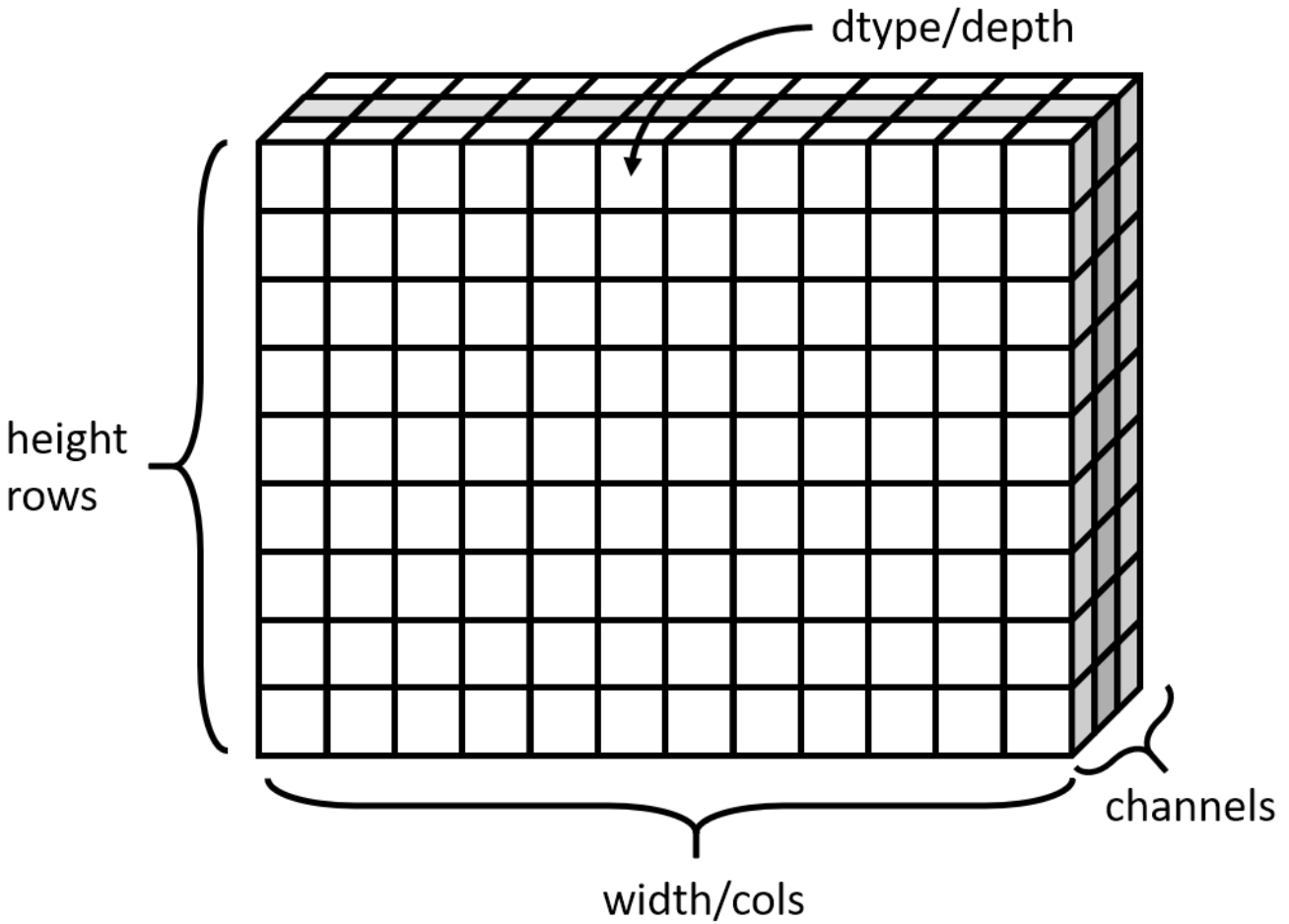
```python
import cv2

# Load an image
img = cv2.imread('messi5.jpg')
print(type(img))    # <class 'numpy.ndarray'>

# Image properties: number of dimensions
print(img.ndim)     # 3

# Image properties: matrix shape
print(img.shape)    # (342, 548, 3) = (rows, cols, channels)

# Image properties: number of pixels
print(img.size)     # 562248

# Image properties: image data type
print(img.dtype)    # uint8: depth
```

https://opencv-python-tutroals.readthedocs.io/en/latest/py_tutorials/py_core/py_basic_ops/py_basic_ops.html#basic-ops

Image



Image



Push Code to GitHub

References

References

- OpenCV Documentation
- OpenCV Documentation | OpenCV Tutorials
- OpenCV Python Tutorials
- pyimagesearch